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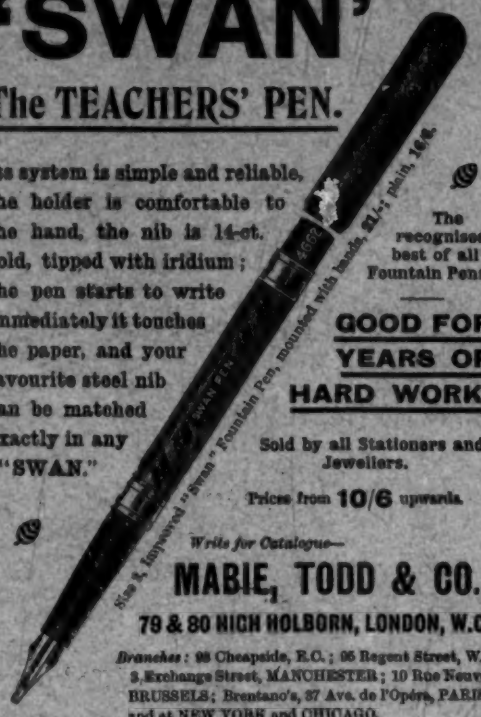

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Educational Opinion.

A "Health Conscience."

WITH gradually increasing urgency the Board of Education has been laying stress on the teaching of hygiene. Rightly so, for in the inculcation of decent physical habits the teaching "corps" can do more than all the school medical officers put together. But there is moderation in all things, and in their anxiety to assist in the work of the regeneration of the national physique, it seems to us that the authorities at Whitehall have forgotten the "golden mean." The last regulations for students in training give a detailed scheme under which hygiene is to be taught—compulsorily—in the training colleges, a scheme which is at once the evidence of a legitimate anxiety and of a hectic desire to allay it. That syllabus contains the skeletons of twelve lectures, into which the compiler has crammed everything which crossed his mind as desirable for a teacher to know. The result is almost a monstrosity. Hygiene—taught as a department of applied physiology and chemistry—is one of the most difficult subjects to teach, from the variety of scientific knowledge required, and the necessity for elaborate practical and experimental work. It is safe to say that no medical student throughout the whole course of his preparation goes through such a course as is here mapped out. And his course lasts five or six years. It is humanly impossible in a brief course of two years, during which thirteen other subjects (some of them double-barrelled) have to be studied, for any students in training to follow such a syllabus. We doubt if any training college possesses a lecturer capable of performing the feat of covering the syllabus in twelve or even twenty-four lectures, so that the regulation is likely to lead to fragmentary, smattering knowledge, which is the very worst for the purpose it is intended to fulfil. Further, the syllabus, besides being brought down to practicable limits, needs the pruning-knife badly. There are repetitions and confusing interpolations from other subjects, besides whole sections which belong to the medical officer and not to the teacher.

* * *

The Education of National Feeling.

THE wonderful effect of national songs and dances in keeping alive a feeling of nationality is finely shown in a most interesting article by Miss A. Hofer in the *American Physical Education Review*. She writes of national festivals in Chicago. At first sight Chicago strikes one as being the last place for the exhibition of national sentiments, explosions of national feeling, which belong more properly to the smaller peoples of Europe. But Chicago is a vast congeries of peoples who have broken adrift from the old world, in such numbers that they form quite a group of differing communities within the borders of the huge city on Lake Michigan. Norwegians number 70,000; Swedes, 175,000; Hungarians, 30,000; while Irish, Welsh, Lithuanians, Jews, and Chinese are there in such numbers that the city really seems to be made up of a number of individual cities ranged side by side.

Now, national songs and dances go deep into the life of a nation. They represent customs, feelings, often events, which make up the subconscious elements of a people's existence, the things that bind men and women together, and give to each people its characteristic, particular racial quality. And so there seems to have grown up spontaneously the habit of celebrating the life and customs of their ancestors on some chosen festal day among these scattered segments of the European peoples. Then the national songs are sung, dances danced, histories recounted, and in their new American home, surrounded by American institutions, the things which welded their fathers of old into a community are kept alive in the hearts of their descendants. How wonderfully potent these celebrations are in educating the younger, denationalized generations into a love for the sentiments of a bygone time, Miss Hofer shows in her article.

* * *

The Festal Days of Chicago.

THUS on May 17 the Norwegians celebrate their Frihedsdag, the day on which Norway secured a constitution and government of her own. On June 24, St. John's Day is kept by the Swedes as their festival, with all the delightful customs observed as in the old country. The Hungarians forgather on March 15, a day of high import in the constitutional history of their far-away home, and keep national feeling alive by the fervid, passionate songs and dances of music-loving Hungary. The Irish celebrate August 15, the anniversary of Yellow Ford, where Hugh O'Neill, Prince of Ulster, routed the English in 1598. The Scots "celebrate" in August; the Chinese at the New Year; the Jews at the Passover; Welsh and Lithuanians, all have their day on which they steep themselves in the memories and customs of the motherland.

It is wonderful as showing how intense is the feeling of racial solidarity, in spite of all the conditions which tend to break it down. And it shows once again what a tremendous educative force resides in folk songs and dances, a force which has too long been neglected in school by those who are responsible for the physical and musical education of the young. In those two things, song and dance, there exist a boundless store of material for the teacher, which has so far remained almost untouched.

* * *

The Universal Agent.

THE work of the schools is truly a many-sided activity. They have been used as means of propagandizing views on nearly every department of social life and activity—a fact which proves incidentally how really important is a teacher's work. Now, in America, they are to be made instrumental in fighting consumption. The "open-air" school was from the first seized upon as a remedial measure, and schools for consumptive children carried on on this plan are fairly numerous in the Atlantic States, and in them the most satisfactory results have been obtained in fighting the dread disease. But now a movement is spreading to institute definite systematic teaching in all schools on the nature and means of prevention of tuberculosis. Text-books on the subject are already supplied in the Washington schools, and lectures are being given and circulars spread broadcast, all bearing on the malady, its nature, and prevention. Either there is much more consumption, relatively to population, in America, or, as every traveller will agree, one hears much more about the disease there. There has

been a great awakening of the public mind on the same subject at home in Britain during the last few years; but it is nothing to the nervous activity of the American conscience in this respect. Only a few days ago Sir James Crichton Browne said in public, "The abolition of tuberculosis is within measurable distance of realisation." We wonder if he were thinking of this great step of enlisting the schools in its final overthrow. At any rate, once again is demonstrated the intense importance to the community of the kind of instruction given in our primary schools. It can make or mar the "health conscience" of the whole nation.

THAT vexation of vexations, the servant problem, received a fillip the other day, in the proposal to institute a college near London for the training of housewives. Not only, be it understood, to train young women in a knowledge of household duties, but in governing a household; for, as a correspondent remarked, the domestic worry is not only a question of good servants, but also of good mistresses. Still the difficulty looks as if we were ever approaching nearer to the common dining-room of Mr. H. G. Wells's novel, *When the Sleeper Wakes*, which would solve the difficulty once and for all. Cookery courses in primary and secondary schools, domestic economy and household management classes in technical schools, polytechnics and evening classes, gave hope for the removal of a real difficulty. Despite all these, in some countries families in despair flee to residential hotels, and abandon the struggle for an individual existence. Will the new venture be any more successful? It looks as if there were something after all which the schools cannot do.

A School for Housewives.

THE report of the examiners of candidates for the army has produced the usual stock of recriminations and suggestions. Mr. Haldane and Mr. A. C. Benson laid the results at the door of the classics, and upbraided headmasters for misplaced devotion to the dead languages, to the detriment of the English part of school education. We seem to have heard the charge before. Stale though it is, there is undoubtedly some truth in it. But a writer in the *Westminster Gazette* changes the quarter of the attack. Keep the classics, he says, not only for their philological value, but for their *military use*. Weapons and strategy have changed, but the *principles* of war remain the same as in the days of Cæsar. We remember that Milton in the *Tractate* urged the study of agriculture from Columella and the Bucolics of Virgil! But we never heard of any agriculturists who had studied their art in those texts. Nor has our experience of coaching army candidates made us very sanguine as to the skill in tactics to be gained from the *Commentaries*. All that, however, is merely preliminary; the sting of the *Westminster's* correspondent is in his tail. "From the son of the duke to the son of the crossing-sweeper inexcusable licence is given to idleness." "It is of far greater importance that whatever they learn shall be thoroughly drummed into their heads than that the syllabus of instruction shall itself be perfectly constructed." "The general failure to teach anything with the ancient thoroughness" is the root of the evil. And "*the most effective cure would be a sufficiency of really good teachers and the judicious use of the birch-rod.*" We felt sure the birch-rod was coming. That "drumming into the head" prepared us for the mention of the conventional "drumstick," at which candidates for the army may well shake in their shoes. We are not likely to return to the birch-rod as a method of instruction, but the sweeping charge of lack of thoroughness (observe that we are *all* affected) makes us think.

"Miles"—and his Critics.

AT the moment of writing the above comes along another contributor, apparently a "coach" experienced in the ways of army candidates *and girls*. He plunges at once *in medias res*. The "drumstick" method he relegates to the case of small boys. (How the aforesaid small boys must loathe being thus offered up as sacrifices to the *manes* of Dr. Busby of birch-rod fame!) Then he agrees with the previous critic on the charge of lack of thoroughness brought against teachers. Only critic No. 2 is more specific—according to him it is only male teachers who are not thorough. Essay writing by boys of the age of army candidates cannot compare, he says, with the work of girls a year younger, and he gives the following reasons—(1) Girls are better taught than boys—their teachers are more painstaking; (2) the unhealthy devotion to games and amusements is not so prevalent; (3) the girl has naturally, until spoilt by society, a more exact and orderly mind than the boy; (4) she is more conscientious; (5) in girls' schools there is a tradition of work—in boys' schools a tradition of play; (6) the girl is constantly practised in written work, and is kept much better informed than the boy on current events. So that the periodical squabble over the examinations for entrance to the army, in which everybody tries to put the blame of failure on another's shoulders, amounts to this. Mr. Haldane and Mr. Benson blame the classics. The military critic blames the teachers because they are slack, and adjures Mr. Haldane to spare the classics because of the tactics they contain. While the civilian critic says it is only the mere males who are lacking in thoroughness as teachers—for look at the girls. His panacea would apparently be to cashier men teachers, and have army candidates taught by women!

Military and Civil.

FOR perhaps the first time in history, marionettes are to be pressed into the educational service. It appears that in the Sicilian quarter of New York one Antonio Parisi has been in the habit of giving historical shows of *fantoccini* to his fellow-countrymen. His puppet-plays are drawn from the life and times of Charlemagne, and the children of the quarter are said to know all about the great emperor by means of these marionette performances. As an American would say, the puppet-shows have "hitched on," and a committee of the People's Institute of New York, struck by the results of Signor Parisi's plays, have taken over the whole enterprise, *fantoccini* and Signor Parisi included. A home is to be found for them in the centre of the city, and the puppets are to perform plays which can be used in the teaching of history generally, from which we conclude they will have to abandon Charlemagne and his paladins for a time, and strut to the inspiration of the Pilgrim Fathers, the Wars of the Revolution and Secession, and such like. Moreover, instead of delighting and instructing only the little Sicilians, they are to play to the whole of the school children of New York

Educational Puppets.

and their teachers—in squads, of course, since New York schools can provide an audience of 600,000 children or thereabouts. Now where is the genius who will make Punch and Judy instructive?

* * *

A Medical Horror.

ONLY a few weeks ago a great physician said there was hardly a sound youngster in the London schools. So sweeping a statement made us ask if there were not some professional exaggeration at the root of it. But we confess that the following quotation made by Dr. F. Lawson Dudd from the report of the Royal Commission on Physical Training in Scotland rather weakened our scepticism: "In Edinburgh it was shown that there were 700, in Aberdeen 458, cases of unrecognised consumption in children attending the elementary schools. 'In Edinburgh,' he declared, 'about 1,300 children are at the present time daily attending the schools suffering from dangerous heart disease, in Aberdeen about 250. In Edinburgh about 12,000 children out of 30,000 are suffering from ear disease; about 15,000 from disease of the throat. In Aberdeen the figures are 2,250 and 7,500. About 10,500 ailing children, according to this report, were from day to day being forced in Edinburgh to attend school; about 5,700 in Aberdeen.'" These figures are appalling in their significance. If such things be true of the few great towns where investigations have been made, what a mass of suffering little human beings have been left to suffer unaided and unknown! In the face of such reports it seems hardly credible that there are those who oppose, with voice and pen, the foundation of children's clinics and the appointment of adequate medical staffs! How else is the national physique to be saved from abject degeneration? And where is the pertinence of spending large sums on education, if the recipients require first a doctor's care before any education is possible? An adequate medical staff is the first necessity, and in the long run the cheapest. But what *adequate* means when translated into numbers has as yet been totally misapprehended by educational authorities.

* * *

American Treasure Trove.

WE never open our batch of American journals without finding things in stray corners that start a smile. The committee which sits in permanent session on the simplification of spelling puts out from time to time lists of some hundreds of words which they have mangled into appropriately new shape for the use of the public. The last emanation is a list of participles, preterites, etc., with rules for procedure by the beginner in the new cacography. And when we came across a specimen sentence, "The hart bowed down with wait ov wo," we succumbed, and wondered if the committee really thinks it will succeed in face of such a phrase as that.

Even Dr. Stanley Hall adds to one's momentary gaiety. "Hooligan" and "rough" we know, and so do the Americans. Why, then, drag in "hoodlum," and proceed to build another word "hoodlumism"? In the more stimulating atmosphere of the New World words grow like mushrooms. A "rough" becomes a "tough," a "hooligan" a "hoodlum," and a "tramp" a "hobo"—but what is "to primp"? We give our lady readers as many guesses as they please. They *ought* to discover the meaning, but they won't. Well, when a woman pokes up her hair, straightens her dress, and generally gives herself an approving pat, then—she primps.

P.S.—Our ignorance has circled back upon us like a boomerang. Our own "reader" informs us that *Chambers's Dictionary* gives the word as of Scottish origin, and we find it given elsewhere as a variant of "prink." This proves the persistence of quaint local usages in common American speech.

EDUCATIONAL REMEDIES FOR UNEMPLOYMENT.*

BY SIR CLEMENT KINLOCH-COOKE.

CERTAIN amendments are required in the curriculum now in force in our elementary schools. In place of a literary education I would give a practical education. Except where girls and boys show exceptional literary ability, have obtained scholarships enabling them to attend secondary schools, and are, so far as one can judge, in every way qualified to enter the teaching profession, or likely to be an asset to the nation by proceeding to a university, they should at the age of thirteen be passed on to trade or pre-apprenticeship schools; or if that course be not possible, the remainder of their time at school should be devoted to receiving manual instruction. This would entail extra expense, but it would be an outlay that would well repay the State.

To a selected number of boys I should give the alternative of going on a farm, not with the object of being trained for the land here, but in order to qualify them for emigration purposes. They would continue their general education at the farm in the same way as is now done in the pre-apprenticeship schools. Facilities for placing these boys with farmers in the colonies could be obtained by an arrangement with the Central Emigration Board pending the institution of a system of State-aided emigration between the Home and Colonial Governments.

No girl or boy ought to be permitted to engage in street trading while at school, and a law should be passed forbidding any child under sixteen to sell articles in the streets.

Thrift should form an essential part of instruction in all elementary schools, and certificates for this subject should be awarded by the County Council.

All boys attending elementary schools should be encouraged to sign a pledge, involving total abstinence from intoxicants or smoking.

In every district an after-school employment committee should be appointed, consisting of representative men and women in touch with the different activities and industries in the district. These committees should work in conjunction with a county committee, and the county committees should be under the direct control of a Board of Employment composed of honorary members with a paid secretary or registrar.

The half-time system should be abolished.

Technical instruction in day or continuation schools should form part of our national system of education and be encouraged by means of diplomas, the possession of which should give the recipient some qualifying advantage. Employers should be required to provide the necessary facilities, and they might further help on the movement by insisting on their employees possessing a diploma before receiving promotion or an increase in wages.

* From *The Empire Review*.

The New English Movement.

THE PREPARATION FOR LITERATURE THE MOST IMPORTANT TASK OF THE PRIMARY SCHOOLS AT THE PRESENT TIME.

WHAT CAN BE DONE IN THE ELEMENTARY AND PREPARATORY SCHOOL TO LAY A FIRM FOUNDATION.

THE LITERATURE OF THE UPPER STANDARDS.

BY "OBSERVER."

TEACHERS interested in the formation of school Book Clubs experience some difficulty in obtaining suitable material for junior pupils. It is easy to draw up a list of the less portentous English "classics" for older pupils, but there are few of these suitable for children of ages ranging from eight to eleven.

One teacher of my own acquaintance encourages his junior Book Club members to buy some of the more literary reading books, such as the most up-to-date publishers now issue in a form which, except for the price on the cover, is in no respect like the old type of "literary reader." This was found to be an excellent plan, but my friend soon discovered that books of a different character were also required. These he found in the small, dainty series of books containing what may be fitly termed preparatory literature, and published by Messrs. Jack and Messrs. Nelson. These books always please young buyers greatly, as they make instant appeal to the younger child's love of brightness and colour. Moreover, the small quarto size is very attractive to a young pupil. Another teacher friend classes these volumes as "chummy books," and the term is very apt.

We must now consider the burning question, What is the best form of literature for the upper standards?

A book of extracts from "standard" authors? Most decidedly not. The extract has its place and use, but it appeals to rather older pupils than those of our primary and lower secondary schools. Besides, the book which professes to "introduce the pupil to all the standard authors" is a pious fraud. We cannot "introduce" a small boy or girl—after all, our fifth and sixth standard pupils *are* mere small boys and girls—to Goldsmith or Addison or Thackeray by means of one or two snippets. Such pupils will read our extract under pressure, but it will rarely make any direct appeal unless it is of absorbing interest in itself; and if it does arouse keen interest, it usually ends abruptly, and so causes a feeling of revulsion in the mind of the young reader.

A passage from *Vanity Fair*, however well selected, will not interest primary school pupils in itself, and it is utterly absurd to pretend that such an extract will lead the pupil on to a perusal of the whole book. It might be used by a skilful teacher of middle form pupils to mark a book which ought to be read some day, and to illustrate Thackeray's style of writing; but for upper standards and junior forms the extract is generally useless.

If our school book compilers knew their literature really well, they would be able to provide upper standard pupils with books of short tales drawn from most of the best writers—tales which will rouse keen interest by their intrinsic modern attractiveness. There are complete stories to be found in Addison and Goldsmith, if we care to look for them. Thackeray's occasional papers contain others. The works of Scott, Lamb, Poe, Bret Harte, Irving, Dr. John Brown, J. A. Froude, and others afford many short complete tales of the most suitable character. There is really no necessity to make up our miscellaneous reading books of snippets from novels and other works of considerable length. Let the editors concentrate on the short stories and so-called "essays" of a narrative character, and they will give us books that even school pupils will really enjoy.

We must give up the idea of systematically introducing young pupils to *writers*, and try rather to interest them in their *writings*. Only a very few names of English men of letters will remain in the mind when schooldays are over, and these ought to be authors to whose works young people can turn for recreative reading when the day's work is over. We must pick and choose, and we must be content with guiding the reader to writers of repute and of moral vigour rather than to those authors whose works appeal only to connoisseurs of literature. We all know that by the rules of the game "Q.," Conan Doyle, and Stanley Weyman have not yet been admitted to the ranks of the immortals; but these three writers will make instant appeal to youths and maidens of ordinary calibre, who would yawn over Goldsmith and Addison and go to sleep over Milton and Johnson. It seems to me that our business is to pick out from the mass of modern writers those whose works are virile and healthy, to concentrate attention on Quiller-Couch, Weyman, and Conan Doyle, and others of like standing, so that a taste may be formed which will at a later date instinctively reject the feverish problem novel and the blatant novel with "a purpose."

There is plenty of scope for pioneer work in this direction. Our efforts are largely rendered fruitless because we hesitate to abandon the old ideas. It sounds so plausible to say that our school pupils ought to be rendered familiar with the "kings and statesmen" of letters; but when this leads to the forced reading of extracts from works written for adults of experience, and the memorising of literary biographies which mean less than nothing to children of eleven, we drop with a very considerable bump from Ruskinian to newspaper prose. I defy any one to make the author of Gulliver acceptable to pupils of this age. It is Gulliver himself, not Gulliver's creator, who enchains the attention, and the child must often wonder with surprise why he is expected to couple the half-mad and virulent Dean of St. Patrick's with the wonderful adventurer of Lilliput and Brobdingnag.

To sum up—(1) It is, as a rule, only the complete literary passage which will rouse and sustain the interest of school pupils with scanty literary predilections; (2) it is modern and not mediæval literature to which we must direct the attention of primary school pupils;

(3) it is the writing rather than the writer that must be first considered, for the reader who has learnt to test a worthy book will often find good matter to his taste in the works of authors who never attain to what is known as fame.

Many of my teacher friends have started out at the beginning of a school year with such a book as *Treasure Island* or *Robinson Crusoe* or *Westward Ho!* as the sole class reading book for the year, and at the end of the first term have experienced a sense of deep disappointment. This was to be expected. With a few rare exceptions "continuous readers" are not suitable for class use. They are for individual reading either at home or at school, a kind of genial and non-exacting supervision being exercised by the teacher over the reading to ensure the minimum amount of skipping: there are, however, passages in some famous books which were written to be skipped. The class reading book ought to consist of shorter readings—preferably *stories* for this stage—each of which can be comfortably dealt with at one or two sittings. This consideration may perhaps encourage a few younger teachers who have given up trying to foster a "taste for the best books" owing to the total failure of an initial experiment. As a profession we are slow to learn that a book can be used in any other way but the time-honoured one—namely, for "reading round."

It is said that boys and girls take no interest in poetry. My own experience is that they can be trained to love the story poem and a limited number of poems of sentiment which are, to quote Sir Walter Raleigh, "processions of sweet sounds." But this can only be done if they are allowed to choose their own individual passages or poems for memorising, and if the poetry lesson loses its old-time character of a mere verbal drill. At the same time it seems to be impossible to create in the mind of the ordinary person a taste for reading poetry in any degree comparable with the universal taste for school fiction. For one person who reads Mrs. Browning's "Aurora Leigh," a thousand would read a novel on the same theme and with the same title. Obviously the poet's singing robes create a feeling of discomfort in the man of plain broadcloth, who prefers the company of men of his own homely kind. I have found, however, that ordinary people like to have good poetry read or recited to them, and it is just possible that if the Alfred Austins of our own time reverted to the methods of the mediæval gleemen, they would command a larger and a more appreciative audience.

I do not think that we quite appreciate the value in later life of noble lines learnt in our youth, when we understood them only in part or not at all. They have a trick of recurring when solace or inspiration is needed. It would not be difficult to collect instances of great deeds which have been inspired or performed to the tune of the winged words of the poets of old time. For this reason it is well to encourage our pupils to store in their memories, not only whole poems, but shorter detached passages, couplets, and even short sentences or phrases drawn from poems of the highest rank. Who can measure the helpfulness of such lines as these:—

> "Tasks in hours of insight will'd
> Can be through hours of gloom fulfill'd."
>
> "His stride the stride of all the valiant dead."
>
> "It matters not how strait the gate,
> How charged with punishment the scroll.
> I am the master of my fate,
> I am the captain of my soul."

One is glad to find, too, that the practice of committing to memory short passages of prose is growing apace. Let them be worthy of the effort, and let us not reject passages from the Psalms and Authorized Version of the Bible. Quite apart from religious considerations, who can estimate the beauty of such a passage as that which describes Mary at the sepulchre or that which tells of that wonderful revelation in the upper room at Emmaus?

SUGGESTIONS FROM AMERICAN SCHOOLS.

BY W. H. WINCH, M.A.

(*Continued from page 393.*)

IF an expert visitor to American schools asks, after hearing lengthily of methods and syllabuses, "Well, all that is excellent; but what does it amount to? What, after all, can the pupils do?" he is invariably conducted to the graduating class.

In elementary schools the graduating class is the second half year of Grade VIII., and the great majority of the pupils in this class are expected to reach a graduation standard. The average age of graduation from elementary schools is approximately fourteen and a half years, so that the age of this class is decidedly above that of our Standard VII. But the point of interest lies in this. The principal expects you to judge of his school by the children of his top class. He tells you how many children he has in the school; he tells you how many he has in his graduation class, so that you may make a rough estimate of the rapidity of his promotions; and then he takes you to his graduating classes to see for yourself how the children have been trained. I made a careful study of the graduating classes in New York, Boston, Chicago, and some smaller cities, and intend some day to draw a comparative picture—America's Grade VIII. on the one side, and London's Standard VII. on the other. The comparison will not always be to our disadvantage, though, in English, I fear it mostly will. However, that is a matter for the future. To-day I propose to give illustrative composition from two graduating classes, one in Manhattan and the other in Chicago. In the first case, we may see the lesson at work; in the second case, having been forewarned of the excellence of the English work, and invited to go and hear it, I took steps to place the children wholly outside the suggestiveness of the excellent teacher's questioning.

MANHATTAN, NEW YORK STATE, ELEMENTARY SCHOOL FOR BOYS.

Grade VIII. B. Thirty-one children were present, of an average age of fourteen years.

This "recitation" dealt with what the teacher called a "narrative composition." The subject given was the somewhat hackneyed one, "*A stitch in time saves nine.*" But the treatment was not hackneyed. Each pupil was expected to find a short pointed story to illustrate the proverb; better still, if he could, to invent one. In a previous lesson some "compositions" had been done orally in class; then each boy had written an exercise, which was handed in at the close of the recitation. At the commencement of the present recitation the marked exercises were distributed. The teacher, with her notes before her, and a knowledge of the errors made, now sat down to conduct a kind of symposium or class criticism. I fear that my arrival in

the classroom may have had the effect of saving some who had been marked out for critical disapproval, and of exalting the horn of the proficient; but whether that was so or not, the conduct of the lesson was extremely interesting. A boy, selected by the teacher, rose to read his essay, which ran thus (I quote from the papers exactly as they were written, without showing the teacher's corrections):—

"The other day Johnny was playing leapfrog with some of his friends, and while make a exceptionally high jump his trousers split in the seam. As the tear was very small our hero didn't pay any attention to it.

"That afternoon Johnny went to Coney Island with his mother and sisters. As his mother was about to pay the fare, the quater slipped out of her hand and fell to the floor of the car.

"Johnny instantly bent down to pick it up when—sizz-sik; and Johnny instantly was the cynosure of all eyes."

"Now," said the teacher, "I call first for general criticism. You will remember the topic that was given you, and that your general criticism should deal with the suitability and point of the narrative."

A pupil was then called upon to criticise. He said, "I think it is well worded, that it all belongs to the subject, and that it illustrates the subject." No contrary criticism being forthcoming, the teacher said to the class, "We will now criticise in detail;" and to the boy who had written the narrative, "Read your first sentence." My reader will follow the lesson better if he now looks back to the boy's exercise, sentence by sentence.

Teacher. What sort of sentence is that?
Pupil. Long and compound.
Teacher. Is it too long?
Pupil. No.
Teacher. Why may it be so long?
Pupil. Because it belongs to the same subject.
Teacher. Is the second sentence right?
Pupil. Yes; but I don't like "our hero."

I could not help breaking out into a responsive "Hear, hear!"

Teacher. Is he right in beginning a fresh paragraph?
Pupil. Yes; because he is beginning a new topic.
Teacher. Is the fourth a good sentence?
Pupil. I think it is too long.
Teacher. Does it lack clearness because it is too long?
Pupil. No.

A general feeling was quietly manifest that the pupil who thought the sentence too long had been "squashed."

Teacher. Is he right in beginning a new paragraph with the next sentence?
Pupil. No; he is dealing with the same topic as before.
Teacher. Do you like "cynosure of all eyes"?
Pupil. Yes.
Teacher. Why?
Pupil. It brings us to a climax at the end.
Teacher. Has he done that?
Pupil. Yes; that's why we feel it is so good.

I think they all felt it was good, for that and other reasons to which the boys are perhaps more pleasantly susceptible than to matters of style. The story touched them home; the incident might have happened to any one of them.

The next exercise which was dealt with ran thus (as before, the composition was read by the boy who had written it):—

"A merchant finding himself in need of money went to a bank to borrow the amount he desired. He signed a bond promising to pay the amount back in six months.

"He had little doubt that he could not be able to pay the money back, as he had a saleman who was doing fine business out of town, and who would bring a large profit. He also intended to pay some money back each month.

"The man's interest from his business came regularly, but instead of doing as he intended he invested it in stocks, always saying, 'Oh I'll have double that amount next month and will pay both months due together,' but the next month he did the same thing. The time for payment came and not a cent had been payed.

"All day the merchant paced the depot waiting for his employer to bring the money he expected. The employer had intended to come nearer home each day but had neglected to do it, and decided to make the trip on one day.

"The train the man was on was delayed 12 hours, making it impossible for him to be home in time and the merchant's credit was lost."

Teacher. What do you think?
First Pupil. It is a good thought, badly expressed.
Second Pupil. It deals with punctuality rather than a stitch in time.
Third Pupil. You want the point—the employé came home late; the talk about the stocks and bonds carries you away from it.
Teacher. I think you have wasted three paragraphs; omit them and rewrite it.

The writer then defended his position. "I wrote those paragraphs," he said, "to add to the effect; but if they are not understood in that way they are bad."

I cannot refrain from calling the attention of English teachers to the "psychologic" doctrine which the boy takes up quite readily, and indeed, though wrongly, on which he defends himself. Also, it is worth while to note the air of American reality about the narrative.

A third exercise was then read:—

"One day three boys went to the river to row.

"They were sailing along very smoothly when suddenly one of the oars fell into the water. Two of the boys that were in the boat volunteered to jump in after it, but the boy who was rowing said, 'No, I can paddle home with one oar.'

"But no sooner were the words out of his mouth, when the other oar fell into the water. The boat began to sway from side to side till all of them fell into the water."

Teacher. What general criticisms have you?
First Pupil. The essay does not illustrate the title, and there is no climax.
Second Pupil. I think it does relate to the title, for the first oar should have been caught.
Third Pupil. Why should the boat have turned over because the oar was lost?
Fourth Pupil. Why should the boat swing because the oars fell out?
Fifth Pupil. It wasn't their fault, because the second oar fell at once.
Sixth Pupil. If they were sailing they were not rowing.

The time of the recitation had now expired, and I was sorry; for I think English readers will agree that such lessons are most valuable for children.

(*To be continued.*)

THE ENGLISH ASSOCIATION AND THE PRIMARY SCHOOL.

AT the annual general meeting of the English Association one session was devoted to the teaching of English in our elementary schools. That the Association is fully aware of the importance of encouraging and stimulating this branch of the elementary school work is witnessed by the large attendance of the members and by the close attention paid to the admirable papers read by Miss Gill (headmistress, London County Council Laxon Street School) and Mr. J. W. Samuel, B.A. (headmaster, Millwall Higher Elementary School). In opening her paper, Miss Gill said that it was unnecessary to dilate to members of the English Association on the educational and moral value of a taste for literature, and so at once proceeded to explain the methods by which she endeavoured to cultivate this taste among the scholars in her own school.

In all English lessons the object kept in view is not the imparting of knowledge but the directing of thought. The children do not come from cultivated homes, and the greater part of their lives is passed amidst squalid surroundings, and so the English lessons are intended to lead them to appreciate and to love the beauties of literature, which at the present day lie within the reach of all.

The first step is to lead the children to appreciate the *beauty of sound*, and for this purpose some simple poem, such as Tennyson's "Birdie and Baby" or Blake's "Little Lamb," is read by the teacher, so that the class may catch the beauty of diction and the rhythm. Mental visualisation naturally follows the hearing of the poem, the teacher testing the accuracy of the mental picture by such questions as, "What kind of bird do you imagine Tennyson meant?" Drawing is sometimes resorted to as a means of revealing the content of the child's mind. Having realised the beauty of the language and grasped the poet's meaning, the children read the poem aloud as an exercise in pronunciation and enunciation. In this way the children become acquainted with many authors and a considerable range of literature, chiefly, at this early stage, fairy tales, myths, and simple poems. These are retold by the children to train them in expressing their thoughts in suitable language; but ample time is always allowed for a child's ideas to assume definite shape before any attempt is made to express them. The value of this was shown on one occasion, when, a class having given exceptionally intelligent answers to His Majesty's Inspector, one girl advanced as a reason, "He waits; he does not interrupt;" whilst another said, "He seems to know what is in our minds." This reveals the two points that are essential to every teacher—patience and sympathy. From reading aloud the children are led to enjoy silent reading and the study of a short poem or paragraph, and what is meant by the term "study" is best expressed in the words of one of the children, "Reading is to look, studying is to think thoughts."

Reading by the teacher occupies an important part in the scheme of work, seven lessons per week being given to this in the lower part of the school, five in the middle, and three in the upper part, and with the younger children the reading is always followed by conversation.

These readings consist of selections from Tennyson, Longfellow, Wordsworth, Goldsmith, stories from the *Arabian Nights*, *Robin Hood*, Church's *Stories from the Iliad and from the Odyssey*, Defoe, and Dickens. No attempt is made to drag in "useful information," even the lives of the authors being left until later; in fact, it is laid down as a guiding principle in all literature lessons that it is the spirit that gives light, and that if the teacher loves her subject she will reach the heads and souls of the children through their ears and minds. As the children get older they enter the ballad world, where they revel in the narratives and descriptions, the stirring scenes, and the background of nature. When such a ballad as "Lucy Gray" is read, the children form mental pictures of the snow-covered scene, the broken bridge, and the search for the lost child. Similarly, in taking "The Wreck of the Hesperus," the beauty of such words and phrases as "the fairy flax," "the dawn of day" would be considered, and again the children would form their mental pictures. These pictures might then be compared and contrasted, the quiet, peaceful snow scene of the one with the raging storm with its bells and guns in the other, and both with a background of nature.

"The Destruction of Sennacherib" affords ample material for mental visualisation, opening as it does with the pomp and panoply and brilliant colour of the East, and closing with the delicate beauty of a colder clime. The futile power and glory of war is contrasted with the mighty, mysterious omnipotence of a glance; the rolling rhythm of the opening lines is followed by the exquisite beauty of the description of sunlight sinking into night; the silence of the dead is in sharp contrast with the storm of grief and passion, the lines falling again into softest cadence as the broken idols bear witness to the living God.

The children are encouraged to select for themselves the poems they would like to learn. When the piece is of a dramatic nature they will apportion the parts among themselves, and it is an evidence of the moral benefit they derive from the work that no girl ever recites the favourite piece of another, even if she can do it greater justice.

The girls not only acquire a real love of literature themselves, but also carry it to their homes, for young children when first admitted to the school are often acquainted with many poems which they learned from their elder sisters; in fact, from the readiness with which the girls respond to their training the reader of the paper had come to the conclusion that there is in all children an innate love of the beautiful.

Mr. Samuel prefaced his paper by complimenting Miss Gill on the splendid work achieved in her school; but owing to frequent change of school in the last few years he himself could not show such a record of work accomplished, and would therefore confine himself to a short review of what these experiences showed him had been and was being done in the way of teaching English in elementary schools.

Of all the factors which determine the character and rate of progress in a scheme of national education the most important is public opinion; and in 1870 public opinion did not intend a shilling rate for education, or recognise that a poor man's child needed more than a bare working knowledge of the three R's. Parents, too, were then either actually hostile or complacently indifferent; now, however, they no longer oppose us, but are rather our active allies. Public opinion is now with us. Every paper has its literary column and its review

page; a penny will buy the reprint of a great book; Shakespeare is becoming remunerative as a theatrical speculation; and the artisan reads Bernard Shaw. The first step in the study of literature is to overcome the mechanical difficulties of reading, and there is a tendency to give a somewhat exaggerated importance to "silent reading;" but it must be remembered that in literature dignity of sentiment and beauty of form go together, and therefore the ability to read with accuracy of pronunciation and some appreciation of tone and feeling is a most valuable acquirement, while regular practice under skilled guidance is the best antidote to the present day toleration of mispronounced and mutilated speech. In connection with the teaching of reading, the improvement that has taken place in the reading-books is a matter for sincere congratulation. They are no longer anonymous, but generally bear the names of experienced and cultivated editors; and the reading matter is no longer stuff for which the only justification appeared to be an obtrusive and stodgy moral, but consists of prose of high literary merit and true poetry of description and action, such as children most delight in. There is still, however, room for a London "reader." It is the familiar that is interesting, and even little children would appreciate a "reader" that told them of their city, with its busy streets and lovely gardens, its memorials of the past, and its palaces of the King. They should learn that John Milton was not the only Londoner, but that Chaucer, Spenser, Bacon, Gray, and Ruskin are also their fellow-citizens. Having suitable "readers," a closely correlated series of class activities should be grouped around them; material would be gathered for the conversation lesson which supplies training in that accuracy of speech on which clearness of thought so closely depends. Written exercises will be recapitulatory of these oral reproductions, and the comparison by the child of his own halting and faulty attempts with the clear, well-chosen language of the book will prepare the way for original composition, and may even lay the foundations of a clear literary judgment.

The result of all this would be that the child would be able to read with a clear intelligence and some amount of personal pleasure, to reproduce with tolerable accuracy what he has read, to report correctly what he sees and hears, and to express his thoughts in simple, straightforward English, unmarred by glaring inaccuracies of syntax. He possibly will have begun to appreciate the beauty of the setting as distinguished from the content of the thought. He should have some conception of what his city and country were like in bygone days, and have caught some glimpses of the great world beyond his immediate ken. He should have begun, under the influence of this orderly method of instruction to systematise the great mass of his out-of-school experiences. In the case of the child whom poverty compels to leave school as soon as he reaches the age of exemption all this is not possible, and the teacher must be satisfied if by his reading the child has acquired some amount of affectionate interest in literature; if his ear has caught the true ring of melodious speech; if his soul has been touched, even a little, with the magic of the poet's song; if he can recall, from stores of memory, just a few bright pictures to enliven the dull routine of his daily round; if sometimes noble thoughts and sweet sounds come to drive away gloom and give hope for the morrow; if he has learnt that leisure moments may be times of refreshment and delight.

THE DRAMATIC INSTINCT IN CHILDREN.

BY RUBY K. POLKINGHORNE, B.A., STOCKWELL SECONDARY SCHOOL.

"Silent, O Moyle, be the roar of thy water;
Break not, ye breezes, your chain of repose;
While murmuring mournfully, Lir's lonely daughter
Tells to the night-star her tale of woe."—MOORE.

IN my last article on this subject I mentioned that only a few legends—only a few stories—sufficiently appealed to a child to make him capable of reproducing them well. A form may enjoy being told many stories, but only now and again will the form be roused to reproduce through that story a good piece of work. We must therefore be on the look-out for the stories that appeal to a child's imagination and make him *energetically* alive to the beauty and force of words. Old legends—Celtic, Teutonic, Greek, or Latin—seem to me the best for children to reproduce, and of these the Celtic legends are the best because the stories are so simple.

We must always bear in mind this one great advantage to be derived from letting children act stories—namely, that they are forced to dwell on the legend for some time, to think about it actively for a fortnight or even three weeks. And I believe when we tell children stories we tell them too many, so that it is surprising how few can retell a fine old legend quite correctly and with fitting details.

I told a form of twenty-one girls (average age 12) the story of the "Four Children of Lir." Then I divided the form into three sets of seven, and I told each set to prepare the story, and retell it to me in a fortnight's time. The result was very interesting. One set almost reproduced the words I had used, because they kept coming to me for help; the second and third sets showed more originality. Each set introduced these characters—a story-teller, four children, Eva, a hermit. The ending was different in every case. Below I give the story as the children retold it. I have selected the work of the best set, though I should like to give all three. I am sure that other teachers will find that children enjoy retelling this story, which both from a literary and historical point of view is so interesting to us.

THE FATE OF THE CHILDREN OF LIR.

Story-teller. Once upon a time there was a great chief named Lir, who married a fair maiden.

Four beautiful children were born to him, whom Lir loved very dearly, and great happiness was in his heart. However, one day a sad thing happened. Lir's wife died, and Lir himself would have died of grief if his mind had not been turned from his sorrow by the thought of his four little children. Then he married Eva, the sister of his former queen, and the four little ones grew up under her care, and she loved them very dearly. But as time went on, and Eva saw how all Lir's time and thought seemed devoted to his four beautiful children, the poisonous darts of jealousy entered her heart, and all her love for the little ones was changed to bitter enmity. One day she ordered her horses to be yoked to her chariot, and drove the four children to the shores of Lake Davra, where, because she could not kill them, being a woman, she struck them one by one with her magical wand and changed them to four beautiful snow-white swans.

(Four children walk across room, Eva touches them with wand, and they sit down when changed into swans.)

Eva. Your home is now the waters cold,
None can help you, however bold.
Clamorous birds will trouble your rest,
Sorrow only will dwell in your nest;
Go forth, O swans, on Davra's wave,
Eva ruins, but she cannot save.

Story-teller. Then the four children turned their faces to Eva, and one said,—

Child. Evil is the thing you have done, Eva, and evil is your heart to have thought this thing, and now very sorrowful we must be.

Story-teller. Then the youngest child spoke, even Lir's daughter, for his other three children were sons.

Child. Eva, Eva, jealous and envious,
Who in thy wrath hast made us thus,
Tell us, we pray thee, how long
We are to live the lives of lily-white swans?

Eva (sadly). Better had you never asked this question, for the answer can only cause you deep grief. Three hundred years must you dwell on smooth Lake Davra, three hundred years on the waters of the Sea of Moyle, and three hundred years on the Western Waters, until a Prince of the North shall marry a Princess of the South, and until Saint Patrick shall come to Ireland bringing the news of a pure faith, and until you hear the voice of the Christian bell.

Story-teller. When Eva said these words she looked at the four unhappy swans and grew sorry for what she had done—once she had loved these children very dearly—and she wished that in her heart she had not thought this evil thing.

Eva. I can do little for you now. Your doom is fixed, and sorry am I for it. But you shall keep your own Gaelic speech, and know not how to utter the clamorous cries of wild water-birds, and you shall be able to sing soft, sweet, plaintive fairy music that shall excel in beauty all the music of the world, and lull to peaceful slumber all who listen.

Go from me now o'er the silvery foam,
Haste away quickly and leave me lone,
For the words are spoken, and cannot be broken.

(Eva goes away.)

Story-teller. Then the four swans sailed away sadly, singing,—

Swans. Alas! away we must go on the curling foam,
For we cannot more return to our home.
Our father shall ne'er see our faces again,
And so he will suffer infinite pain.

(Swans depart.)

Story-teller. It would take too long to tell of all the wanderings of the four swans during their long, long life—three hundred years on smooth Lake Davra, three hundred years on the waters of Lake Moyle, three hundred years on the Western Waters. But at last the voice of the Christian bell was heard in Ireland, and people say the power of the fairies ended.

(Four swans enter and sit down.)

Four swans (as bell is heard),—
Can that be the voice of a Christian bell?
If so our joy no tongue can tell;
For nine hundred years we have lived on the foam,
And now we have hopes of returning home.

(Enter Hermit.)

Hermit. Beautiful snow-white swans, whence come you, and tell me who you are?

Swans. Hermit, hermit, old and gray, listen to the tale of the swans, once children royal, young and gay. Our stepmother led us into this awful snare, because of Lir's love we had more than our share. On the shores of Lake Davra this spell she cast upon us, until we hear a Christian bell, and until a Prince of the North shall marry a Princess of the South.

Hermit. Great is the sorrow you have suffered, O children of Lir, but you have heard the voice of a Christian bell; just now I rung it. And I will haste away and seek news of a marriage.

(Hermit goes away.)

Hermit (returning). A Prince of the North has just married a Princess of the South. Hark to the sounds of rejoicing.

Swans (rising slowly and looking at each other)—
Oh dear, oh dear, what can this be?
Our hair which once was so golden and bright
Is now changed to a most snowy white;
Our faces which once were so very fair
Are now wrinkled and lined with care—
And very old people must we be.

Another set of children ended the story by making the four old people fall down dead and the hermit weep, but raise his eyes to see four beautiful laughing children floating through the clouds, and so Lir's children reached heaven.

THE TEACHING OF SHAKESPEARE IN SCHOOLS.

BY C. T. HUNT.

(*Continued from page 397.*)

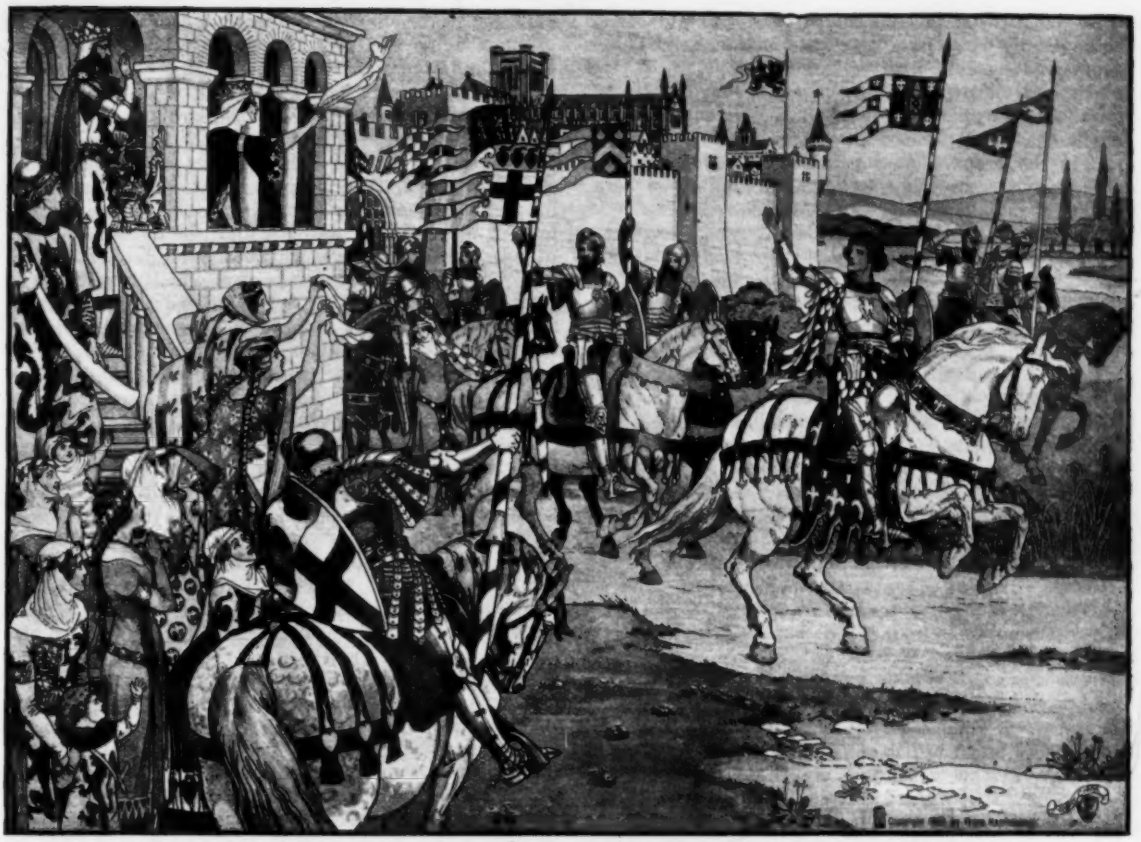
OF books to use there are many. Dekker's (*Gul's Horn-book*, *The Bellman of London*) and Stow's description of the theatre can be used to show how essential was the clear and emphatic rendering of the lines in those early times, and so how necessary to us in school, where we are without those modern aids to the drama which relieve us, but also deprive us, of the using of the imagination.

Sidney Lee's *Life of Shakespeare*, Besant's *London*, and Harrison's *Elizabethan England* can be used. Let them be in the classroom with Hazlitt's *Shakespearean Characters* and Mrs. Jameson's *Shakespearean Heroines*, so that the children can get at them, and set some of the weekly tasks so that they must go to them there, or to the public libraries, for reference.

Then there is the story. If *As You Like It* be chosen, the children should read Lodge's *Rosalynde*. Knowing that delightful story will make the knowledge of the play more definite. The added beauties of Shakespeare's version will be more real, and the reason for the inclusion of "Touchstone" and the "Melancholy Jaques" will be appreciated by some. Then passages from Lyly's *Euphues* can be read, and so a whole vista of English literature would be opened up. I use the expression "opened up" advisedly, for there will be only time for a glimpse into that fair garden. But

> "Some few there'll be who, stretching forth,
> Will reach this smiling land of love,
> And live in pure delight."

Now for the choice of plays. They are for *children*, and if we take those dealing chiefly with problems beyond the little ones we shall just preach our views of things, which may not be valuable to any one, and



KING ARTHUR'S KNIGHTS DEPARTING ON THE QUEST OF THE HOLY GRAIL. BY WALTER CRANE, R.I.
(Reproduced from one of Mr. Hanfstaengl's Cartoons.)

certainly will not be to our small charges. Still, if we pick out those plays which deal with fairies, fun, and fighting, enlivened with adventure and hallowed by parental or filial love, we shall have a wide scope. *A Midsummer Night's Dream*, *The Tempest*, *As You Like It*, *Much Ado*, *Julius Cæsar*, *King John*, *Henry V.*, and *Richard II.* I have used. Sometimes outside influences affected the choice. For examination purposes I was induced to take *Coriolanus*. The children delighted in the pictures of a noble mother, a strong man of action, and some types of workers familiar to them.

By this time perhaps some one will be asking, "How much time must be set apart for all this instruction? In the first, and possibly the second, class of every elementary school two lessons of forty minutes could be given to the study of the play, and ten minutes on two or three mornings per week between the Scripture lesson and the first long secular lesson, to the repetition of the lines to be learnt. One of the weekly forty minutes' lessons should be devoted to studying the poetic beauties of the play, the meaning of passages, the style, and the comparison with other poetry; the other should be given to the gradual development of the atmosphere that is to quicken the whole.

Each week one essay should be prepared and written out of school, and this should be the subject matter discussed during the first part of the latter lessons. Care is needed to make the subjects such as can be freely and intelligently written about by boys who will seek out their information. These essays and discussions should prove a delight to the teacher, for they will clearly show how the children think, and what an astonishingly good insight into character they possess.

A second class I know are studying *Julius Cæsar*. The last essays have been "Julius Cæsar in Britain." A translation of the *Commentaries* is open to them, and they have histories—the "Life of Julius Cæsar" from *Plutarch's* "*Lives*;" the "Julius Cæsar" of the play. These boys will no doubt find differences, but those will only make the work more definite and real to them.

The method, too, is an excellent means of leading the children into habits of working for themselves, and gathering their knowledge from books of reference.

With regard to other means of enlivening the interest, many of the songs taught should be those taken from the plays. The words are made familiar to quite the youngest boys by use of that wonderful collection in the "Books for the Bairns" series, while the settings of Purcell, Arne, Schubert, Stevens, and German can be taught to the older ones. There are fewer finer melodies and part songs than these, and they are just as English in their expression as the words, and infinitely more delightful than the folk-songs so common to-day. These too should be taught; but even boys will contrast both words and music, say, of Schubert's "Who is Sylvia?" with those of "Mowing the barley." Novellos have a catalogue of Shakespearean songs which offers a wide choice. The older settings are more attractive.

Then the dramatic instinct, not a cultured one perhaps, but rather reminiscent of the period when man

was a creature of motion more than one of speech, should be used, both in class and occasionally before friends and parents with costumes cheaply made and as historical as possible. The dressing up, the action, and the fine words expressing such glorious thoughts delight the young, and if the work be properly taken in class the preparation for these entertainments will cause very little disturbance to the ordinary school work.

Here, too, I would suggest that the children should be taken to see the plays performed by good companies. At the theatre they can compare their own crude ideas with those of trained players, and so begin to see how much more there is in the words themselves than they have supposed, and how much wider is the field of emotion and action when cultured men and women portray characters.

Through the kindness of friends at "Wavertree," St. Margaret's, I have had the delight of seeing a "Shakespeare garden" grow. There is an informal part where grow the commoner fruits, the ivies, and wild flowers named by the poet, and at a lower level, stretching out in beauty of line, colour, and scent, is a quaint formal garden with dial, seat, and pleached alley of quince, medlar, nut, and hawthorn.

Not for a London school one will say, not for children many will add; but if from the bank of thyme and bush of rosemary even a few little ones will recall the beautiful lines that speak the nature love of the poet, they are worth growing, and at least worth seeing sometimes. "I know a bank where the wild thyme blows." If only every London girl and boy did know such, their hearts would be purer and their lives brighter.

Lastly, we teachers should make our knowledge of the poet and his plays as wide and deep as we can—we must be great lovers of this great teacher of humanity—so that we can go to the children brimful of the living delights that he has given us, and so lead them to the well of knowledge and wisdom he has opened to the world.

THE PRAISE OF FAMOUS MEN.

BY ALBERT E. ROBERTS, M.A.

IT is rarely that the birthdays and death-days of great men are celebrated in English schools. In America such commemorative celebrations are commonly made a potent factor in English work. This year 1909 is particularly rich in centenaries. As Mr. A. C. Benson says in his monologue on Tennyson, the year 1809 was a "goodly nurse of heroes,"—ἀγαθὴ κουρότροφος is the Homeric phrase. Alfred Tennyson was born on August 6, Oliver W. Holmes on the 29th of the same month; Kinglake, the author of *Eothen*, on the 5th; Gladstone was born on December 29 of the same year. Edgar Allan Poe and Fitzgerald are also honoured with the same birth-year. There are also two great musicians whose names cannot be omitted, Mendelssohn, who was born on February 3, and Chopin, on March 1. Here then lies a golden opportunity for the enthusiastic teacher.

Let me briefly describe one or two phases of the work brought to my notice when I was in America. In the first grade (for children aged six) of the Cleveland syllabus are these words: "*The National Festivals and Anniversaries.* These celebrated in the home and school are especially adapted to emphasising the ethical element in the historical side of social life—the story of Thanksgiving Day, Christmas in the home, New Year's Day. By childlike stories of Washington and Lincoln, and of the origin of Memorial Day, which thrill the children and give them the impulse to 'do and dare,' may be implanted even in these young hearts the seeds of patriotism."

Mr. Chubb of the Ethical Culture School, New York, has devoted much attention to the function of the festival in school life. "It is in the endeavour to lay hold," he says, "upon the child as an artistic and literary personage, by repeating in his education the leading phases in the æsthetic and literary development of man, that the festival will receive its due recognition and play the very important part which it is fitted to play in stimulating the historic imagination, the human sympathies, and the spontaneous creative energies of the child. We plead, then, for the incorporation of the festival in the regular activities of the school. We should preserve in the child, if we can, something of the child-man's responsive glow in the presence of the changes of nature—Christmas and New Year; Candlemas, the old mid-winter feast; Easter, May Day, etc. It is more important still that the child should recall continually on birthdays and death-days the great heroes to whom the race owes its priceless gifts of liberty and humanity." Various experiments are tried in Mr. Chubb's school. A play of Shakespeare is enacted on Shakespeare's birthday. On Longfellow's birthday, perhaps, a lantern lecture on Longfellow is given to the school. One Christmas festival had for its thread of connecting interest the story of the celebration of an old English Christmas at Coverley Hall. The high school students who had been studying the "Sir Roger de Coverley" papers provided the text of the story, weaving in with it material drawn from the *Spectator*, the Christmas data in *Silas Marner*, *Christmas Carol*, *Bracebridge Hall*, and *Lorna Doone*. The illustrative material which realised for the eye the rite and pageant of which the story-tellers had told—the waits, the mummers, the boar's head procession, etc.—was contributed by the other classes, each one of which had made a short study of some one Christmas custom.

Similar work I saw in other schools. In the Central High School, Washington, entertainments were arranged about once a term by the several classes on the work read. One class gave tableaux of the characters of Dickens; another class scenes from *Idylls of the King*—for example, Gareth and his mother, scene at Arthur's court, Lancelot and Elaine at Astolat. These were not elaborately prepared, but voluntarily arranged in a simple manner by the class, and gone through during an ordinary hour in school at the end of term. On March 22, the day of Goethe's death, at the De Witt Clinton School, the German professor of Columbia University delivered an address on Goethe.

There is no need for me to multiply instances. An enthusiastic teacher will find for himself some means of making these anniversaries of real educational value. On the anniversary of Tennyson's birthday any teacher can, for example, read to the class some of Tennyson's poems. I am not so much in favour of giving the life of a poet; better read some of the poet's writings before this is done. Then by all means give a lecture on the man. In December last, I believe, far and wide dry-as-dust lives of Milton were given to children who could never have read a word of Milton. Surely this is carrying commemoration too far; but the spirit of the thing at any rate was right—to pay honour to the illustrious dead.

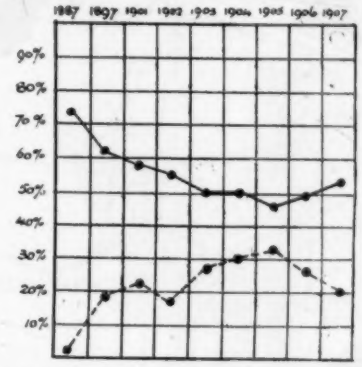
Next month I hope to offer some suggestions for the celebration of the anniversaries mentioned above.

GEOGRAPHY NOTES UP-TO-DATE.

BY E. R. WETHEY, M.A., F.R.G.S.

Brazil—A One-Product Country?

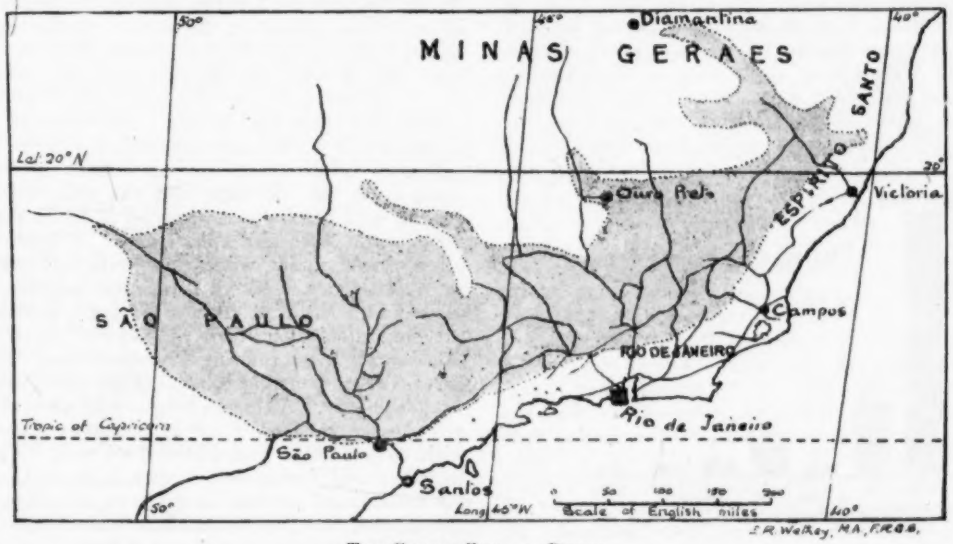
THE flooding of the United Kingdom with Brazilian maps and pamphlets by the "Mission de Propagande et d'Expansion économique" in the month of January this year—designed, of course, to induce immigration into a country which is naïvely alleged to be "a most suitable place for the acclimatisation of



Ratio per cent. of Coffee and Rubber in Brazil to total value of Exports, 1887–1907.
—— Coffee. – – – Rubber.

European colonists"—incidentally brought to one's notice that once again the great Brazilian export, coffee, is holding its own. Twenty years ago Brazil was always put down as a one-product country. And rightly so, for the value of its coffee shipments totalled up three-fourths of the value of all its exports put together. That was in the '80's. Then in the '90's came the demand for, and with it the enhanced price of, rubber, and for some years the rubber export looked dangerously like competing with coffee for pride of place (*vide* annexed diagram). In the last two or three years, however, coffee has "tightened," and according to the latest figures the gap between the two once again seems widening. The present position is that coffee is responsible for some 50 per cent. of the total exports, and rubber for about 20 per cent. After these two—*sed longo intervallo*—come in order cacao, hides, cotton, maté, and tobacco.

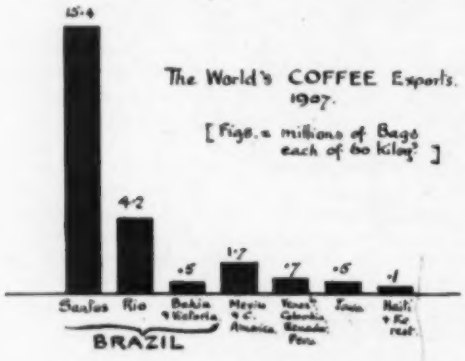
A map of the "coffee zone" in Brazil is interesting. The enormous output is practically confined to three states—São Paulo, Rio de Janeiro, and Espirito Santo. All the plantations lie between latitude 21° and 24° south, and at a height of from 600 to 2,500 feet above sea-level. Originally introduced into São Paulo and Rio as long ago as 1761, the success of coffee in time became so marked as to become the determining cause of Rio's position as the great commercial centre of the whole country. To serve the coffee-planters the double railway system converging on the chief coffee ports, Santo and Rio, was developed, and a glance at the map shows how thoroughly this development has been encouraged. Nowhere else in Brazil—indeed, nowhere else on the continent except in the Argentine—have so many railway lines been laid down. There are some 3,000 miles in the state of São Paulo alone. All "coffee" lines at first, some are now ascending the slopes and tapping the minerals of the inland state of Minas Geraes. It will be long before rubber ever evolves communications of a like nature. It is a commodity as widely distributed as coffee is restricted in its habitat, and relies for transport on the great rivers of Amazonas State and the north (see *Practical Teacher* for August 1907). But, then, rubber is grown all over the world, while coffee seems more and more a perquisite of Brazil. It is therefore worth much expenditure of national capital, whether it be in the form of reis or engineering skill. According to the "Mission's" figures, as in the diagram, over 85 per cent. of the world's coffee comes from Brazil. From sixty to seventy is the usual percentage allowed; perhaps a little more may be granted to the perfervid zeal which is beckoning on the immigrants! This export must represent nearly the whole crop, for very little is consumed at home. The bulk of it goes



The Coffee Zone of Brazil.
Showing (1) Chief Area of Production . (2) Railway Development .

off to the United States, Germany, and France, in the order named.

Brazilian supremacy in the coffee world is hardly likely to be threatened yet awhile. Perhaps in the years to come various parts of East Africa may take up the running, but the African planters have a large leeway to make up. The factors of distribution of this most delicate of crops may be excellently studied from the geography of Brazil. There the climate of the coffee districts is just what is required, for the plant can stand but a narrow extreme either of cold or heat. Between 64° and 70° F. is the best temperature, which must on no account sink below 53°. On the other hand, the heat at sea-level on the equator is much too hot, and the map shows how the coffee zone retires a respectful distance from the coast. But the coast is necessary for the commercial success of the crop, seeing that it is grown almost entirely for export. How well Santos and Rio—especially Santos—supply this factor may be seen from the figures. Finally, much care and labour are essentials. The young tree has to be shaded by other trees. Bananas, erythrinas, and in Brazil, says Chisholm, a tall, coarse pea, are used for this purpose. The last named has the additional advantage of supplying an effective manure when in course of time it dies down. Enlightened treatment of this nature has its reward. There are good bearing trees now in São Paulo fifty years old. It was just this want of care which at first caused failure in German East Africa. The experimentalists planted their trees too near together; they plucked them too early; and they protected them with plantains, which rapidly absorbed for themselves all the good there was in the soil. The labour question in Brazil was at one time very acute. Originally labour was supplied by slaves, and, indeed, Brazil was the last important country to abolish slavery (1888). Had not coffee prices been fairly high at the time in Europe, most of the planters would have been ruined, for there was no great compensation fund to draw upon as in the case of our West Indian sugar people. As it was, the crucial time was tided over. And when, a couple of years later, prices dropped, the emancipated negroes, used to their change, were coming back voluntarily to



the plantations. Nevertheless Brazil is always clamouring for labour—European labour for choice; there are already over 1,000,000 Italians in the state of São Paulo, and the cry is "still they come." All the same *North* Europeans may be excused if they ponder awhile ere they decide to emigrate to what is euphemistically declared to be "the most suitable place for European colonists."

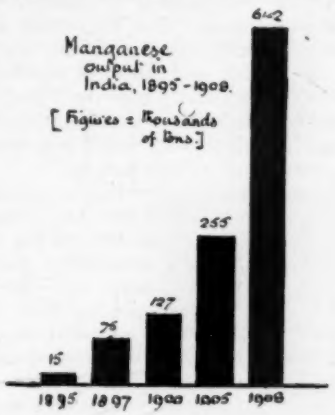
Manganese and its Countries of Origin.

Some recent articles in the *Times* have drawn attention to the remarkable development of the manganese industry in India. This development is hardly to be wondered at in face of the continued increase of the world's steel operations. In the year 1900 just under

The Four Manganese "Districts" of the Central Provinces, India.
C.I., Central India. B., Berar.
Railways. Coalfields. The four districts.

30,000,000 tons of steel represented the total output of all countries engaged in the work; by the end of 1908 this enormous figure had been nearly doubled. Accordingly the demand for the whitish-gray metal whose oxides are so useful in the manufacture of steel has gone up by leaps and bounds. All countries in which manganese is worked have participated in the progress, but none to anything like the extent of India. So much so is this the case that the ordinary statistics dealing with the trade and quoted in commercial publications are now quite out of date. A revolution has taken place. India, which four years ago occupied the third place on the list of manganese suppliers, is now easily first. Mr. W. A. Taylor, writing in Bartholomew's excellent *Atlas of the World's Commerce*, which was published in 1907, and quoting "recent returns," represents Russia as responsible for about 50 per cent. of the world's supply. Although he gives no date, the figures are apparently those of 1904. Brazil is placed second with 20 per cent., and India third with 15 per cent. Germany and Turkey follow with 5 per cent. each, and the remaining 5 per cent. is made up by a large number of countries, of which Spain, Chile, Cuba, Greece, France, Austria-Hungary, and the United States are the chief. Manganese, like iron, is widely diffused, but, unlike iron, is rarely found in large quantities in one place. Taylor's percentages probably hold good now except in the all-important case of the leaders. Estimates still give Russia and India 65 per cent. of the world's manganese product, but in the proportion of 25 and 40 instead of 50 and 15. The wonderful strides made by the great British dependency are shown on

the accompanying diagram. The figures for 1908 are considerably in advance of those of Russia given in Bartholomew's *Atlas*, and Russia since then has gone through a time of terrible stress in the Caucasus region, which temporarily ruined the manganese industry. The annexed map of a portion of the Central Provinces shows the chief region in India at present responsible for this large output of between 600,000 and 700,000 tons of ore. The first systematic working of manganese was at Vizianagram in the Madras Presidency, some thirty miles north of the better known Vizagapatam, and it was not until 1900 that these discoveries were made in the Central Provinces. The industry is located



in four districts*—Chindwara, Nagpur, Balaghat, and Bhandara—and the manganese area is said to extend over some 3,500 square miles. Other areas in India alleged to promise profitable workings are in Mysore, Sandur, Jhabua, and the Panch Mahals district of Bombay.

There are several reasons why this Indian industry in the Central Provinces should go on prospering. The map shows two of them: coal is at hand, and (for India) railways are plentiful. Moreover, labour is cheap and not difficult to obtain, while, hitherto at any rate, the region has been free from strikes and disorder, such as paralysed the Russian manganese workers in 1906. Finally, the ore is of a very high grade (over 50 per cent. metal) and easily worked. Experts say that these first-grade deposits will last another fifty years, at the end of which time prices or inventions will have made it worth while to work the immense leavings and deposits of second and third grade ore. A great saving, too, in the matter of freights will be made when India begins to manufacture its own spiegeleisen and ferro-manganese on the spot. It has been talked of for several years.

The Trans-Himalayan Range.

With reference to the note on the "New Tibet" (*Practical Teacher*, Vol. xxix., No. 7), a letter in the *Geographical Journal* of January from Dr. T. Longstaff, the well-known Himalayan climber, disputes the claims of Dr. Sven Hedin to the *newness* of this discovery. He advances proofs that the existence of this range and its general continuity were known fifty years ago, and that the only part that may be called "new" is a beggarly distance of some one hundred miles in the vicinity of longitude 84½°. He adds that the really great feat performed by the Swedish explorer has been, not the re-discovery of an *old* range, but the crossing and re-crossing of it ten times, where before it had never been crossed once. Be that as it may, our school—and other—atlases had taken precious little account of the existence of these mighty mountains.

* There are four divisions in the "Central Provinces" of India—Jabalpur, Nagpur, Narbada, and Chhatisgarh—and these are subdivided into eighteen districts, of which Chindwara, Nagpur, Bhandara, and Balaghat are practically contiguous.

MEDICAL INSPECTION, ITS WORKING AND DISCLOSURES.

BY JOHN PERKINS.

AMONG others, the Surrey Education Authority have not been slow in setting up the necessary machinery for carrying out the provisions of the Code for 1908. Fortunately, several years ago they secured the services of a medical officer of wide experience, who had done much to awaken managers and teachers to the need for scrupulous care and attention in matters of hygiene and health. The reports periodically issued by the medical officer have proved very instructive and helpful to teachers, and in consequence of this foresight we found the way well prepared in Surrey for the more exhaustive medical inspection which is now demanded.

Notices to the parents of the children who were to be examined were issued through the teachers. It will probably be considered rank heresy to proclaim this to be a wise provision. There are some who, for various reasons, urge that such notices should issue from the offices of the Authority. But a formal notice will not ensure the presence of the parent, and if the relations between home and school are as they should be, the influence of the teacher will be valuable in persuading the parent of the necessity for attendance. To this end an explanatory circular issued over the name of the head teacher has proved very efficacious.

In a particular case, as a result of such a circular, ninety per cent. of the parents attended with their children. In several instances a special time had to be arranged by the head teacher in order to ensure the parents' attendance. Such consideration and thoughtfulness brought its reward in the parents' gratification and appreciation. In some instances personal interviews were given by the teacher or letters were written to those who had scruples concerning the inspection. In each of these cases explanations disarmed the objectors, who willingly appeared in person on the appointed days.

Two reports have been issued by the Surrey medical officer since the new regulation was enforced. In the first of these he says: "The attendance of the parents has been, on the whole, excellent; 2,304 (out of 4,250) were present with their children during the inspections—that is, over 62 per cent. of the possible number. Their attendance has varied greatly in different districts for various reasons. The day of the week upon which the inspection takes place has a considerable influence upon it; so also has the bond of interest between the parents and the schools, which is much stronger in some districts than in others." Of this one need only say that where the bond of interest is not strong, it is the business of the teacher to set about finding a remedy.

The actual inspection is, of course, made at the school. Some there are who think that such an arrangement is inadvisable; but at present at any rate the Authorities have no option, for Article 58 of the 1908 Code says:

"Arrangements must be made so far as practicable for carrying out the work of medical inspection in the school premises." To this we must add the memorandum on medical inspection, which says: "The inspection should be conducted in school hours and on school premises." But even if the Board were not insistent, it seems that if we are to ensure the attendance of children and parents the school must be made the meeting-place. A neighbouring borough Authority, with the special consent of the Board, has decided in favour of a central place of examination for all its schools, so that it will be possible later on to compare the efficacy of the different plans. There will be instances in which much inconvenience will be caused by using the schools, but these are special cases for which special provision must be made. The Surrey report says: "Some slight disturbance of school arrangements during the visits of inspection has been unavoidable in small or crowded schools, but not more than seven instances (out of a hundred and twenty-five) of appreciable inconvenience occurred.....In a few cases the accommodation was decidedly inadequate; for example, in three schools the inspection had to be made in cloakrooms, and in three schools in screened-off portions of classrooms in which work was going on."

The results given by the Surrey medical officer are summarised in the appended table, 8,950 children being examined:—

Defects.	Number of sufferers.	Percentage.
Cleanliness below the average	760	9·2
Nutrition below the average	682	7·6
Teeth decayed	4162	50·5
Post nasal adenoids	786	9·5
Enlarged tonsils	1597	19·3
External eye diseases	322	4
Defective vision	335	4·1
Chronic discharges from the ears	117	1·4
Defective hearing	131	1·6
Defective speech	134	1·6
Heart diseases	71	·85
Lung diseases	70	·85
Affections of the nervous system	64	·8
Other defects	462	5·6

The results are startling, and speak for themselves. In all, 1,578 urgent recommendations to obtain medical or dental treatment were made—that is, for 19 per cent. of the children examined. We must, in making deductions from these figures, note that the majority of the children—5,864 out of 8,250—were infants, and of the remaining 2,386 no less than 1,228 "were submitted for the purpose by the head teachers on account of suspected defects." A large number of the defects discovered in the examination will probably be due to these specially selected children.

The disclosures of the medical inspection are sufficiently serious to justify its institution, and to call for prompt remedial measures. The mere tabulation of statistics will effect little or nothing. The value of the inspection will depend in a large measure upon the relationship between the home and the school. Parents who care and have the means have promptly secured the treatment recommended. Some indifferent and negligent ones have responded to tactful pressure exercised by the head teacher, who, after all, can do so much in this direction. But even then we have some who cannot or will not make the necessary provision. The hopelessly indifferent and impoverished home will always be with us, and it is in these that the children will fail to get the necessary medical attention. We are thus led to demand that some means should be found to provide the remedy for the physical defects which the medical inspection has disclosed.

Let it not be imagined that any Socialistic undertaking of parental responsibilities is to be advocated. "One of the objects of the new legislation is to stimulate a sense of duty in matters affecting health in the homes of the people, to enlist the best services and interests of the parents, and to educate their sense of responsibility for the personal hygiene of the children. The increased work undertaken by the State for the individual will mean that the parents have not to do less for themselves and their children, but more." That is agreed; but while we are arousing the parents to a sense of responsibility the children are suffering, and we are allowing men and women to develop physical infirmities which it is possible to remove. Something must therefore be done. The Education Act of 1907 makes it permissive on the part of the Authorities to attend to the health and physical condition of the children, adding that the Authority "may encourage and assist the establishment or continuance of voluntary agencies, and associate with itself representatives of voluntary associations for this purpose."

In this connection it is interesting to note that voluntary agencies were at work before the State took any action. The annual report for 1907 of the Wimbledon branch of the Invalid Aid Association shows that of 190 cases reported to the branch 157 were efficiently assisted by the committee. Among these there were 60 provided with spectacles, 38 were sent to convalescent homes, and 26 sent to hospitals for treatment. Assistance is given by this association only after very careful inquiry, and the parents are encouraged and expected to make such weekly contributions as they can afford towards the cost of instruments and of treatment. A considerable extension, with the support of Education Authorities, of such work as is being performed by the Invalid Children's Aid Association would probably meet the necessities of the case. Or it is possible that a national system of Children's Care Committees might be instituted, by means of which voluntary workers might assist the authorities in this and in the kindred matter of the provision of meals for necessitous children.

In regard to this matter of amelioration the Board's memorandum suggests that Local Authorities should ultimately formulate and submit to the Board "schemes for the amelioration of the evils revealed by medical inspection, including, in centres where it appears desirable, the establishment of school surgeries or clinics, such as exist in some cities in Europe." It goes on to say: "It is clear that to point out the presence of uncleanliness, defect, or disease does not absolve an Authority from the consequent duty of so applying its statutory powers as to secure their amelioration, and to prevent, as far as possible, their recurrence or development." Thus when the results of the medical inspections have been carefully considered, the Authorities will be compelled to undertake definite treatment. How far voluntary agencies can be utilised, and to what extent special provision will be necessary, must be made a matter of the most careful and thoughtful consideration.

Certain it is that we do not desire a system set up by which treatment is given, free and unchecked, to whomsoever may apply without incurring cost or responsibility. We do not desire our children to develop into a generation wanting in self-confidence, self-reliance, and self-respect, and this must result if the State assumes too readily the functions and responsibilities of the parents. At the same time the cry of the children must be heeded, and this means more money.

Our Art Section.

PAINTERS AND PICTURES.

BY W. E. SPARKES.

II.—SIR E. BURNE-JONES.

SIR E. BURNE-JONES appears strangely foreign in British art. But as no man can possibly invent a totally new style, or can escape the tyranny of his environment—the beliefs, politics, and literary colour—a little searching will always discover the basis upon which he builds his art.

There are certain exquisite little bronze figures to be found in national collections, delightfully modelled statuettes, on subjects drawn from mythology and the Scriptures—Hercules, Mercury, Venus, St. John the Baptist—and all dating from the late fifteenth century. They differ essentially from Michael Angelo's and the later Italian sculpture; their forms are slight, with long limbs and well-marked extremities, the bones showing clearly and the anatomy definite, while the attitudes are graceful and in vigorous action. Precisely the same characteristics are to be found in the paintings by Botticelli and the marbles by Donatello, two artists working during the same period.

Now imagine these statuettes transferred to the canvas of a modern artist who had come under the influence of later art, and who was instinctively attracted by delicate grace, whether in flowers, buildings, or the human form, and you have an art distinctly modern in many senses, yet Italian in spirit and motive.

Such is Burne-Jones's art. Charmed by a wood-engraving after a design by Dante Gabriel Rossetti, the Victorian poet and painter who did so much to change the tendency of British art fifty years ago, he placed himself under that artist, and became an enthusiastic pre-Raphaelite.

"THE HESPERIDEAN MAIDENS." (SIR E. BURNE-JONES.)
(From Messrs. Nelson's Literary Reader, "The Enchanted Garden." Photo by Hollyer.)

In this he differed widely from G. F. Watts, whose more robust nature turned for inspiration to Raphael, Michael Angelo, and the great Greek sculpture to which these artists looked for their ideal forms—massive, muscular, perfect, and beyond common humanity. Raphael, it is true, at first followed the style of his master Perugino, whose lithe, slender, and graceful Madonnas have much in common with Botticelli and Donatello, though without their depth and feeling.

The same spirit is shown even in Burne-Jones's draperies. They cling or float in gentle curves, utterly unlike the voluminous, blowy robes that seem almost instinct with life as we see them in Michael Angelo's tremendous figures in the Sistine Chapel, or in Raphael's cartoons for tapestry. Such drapery clothes the Greek gods who sat in awful state in the pediment of the Parthenon at Athens, the masterpiece of Pheidias, the greatest name in sculpture, and are finely in harmony with the superhuman forms that roused the enthusiasm of the sixteenth century Italian artists, those "Greeks born in modern times."

But this mighty massiveness and godlike strength was foreign to Burne-Jones. His art was beautiful and confined, like a dainty flower-garden cut off from the rude world, a dreamland where it was always afternoon, where nothing strenuous entered to disturb the peaceful quiet. Watts, on the other hand, moved among men in the world, or along the mountain heights where the forests were continually swept by strong winds. Here he had as his companions in spirit the later Italian artists, with all their waywardness, but at the same time with all their manly strength. Burne-Jones is gentle, almost feminine; Watts is manly, but without coarseness. Living apart from modern movements, the one paints sad-eyed, graceful women more English than Italian, and yet with faint resemblances to the equally sad Floras and wood nymphs who dance their sober rounds in Botticelli's fanciful paintings, or to the embracing angels in his exquisite "Morning of the Nativity;" the other, deeply stirred by the modern problems that torment thoughtful minds, paints warriors in armour, or vast rushing spirits, irresistible—Time, Death, and Love; and whereas Burne-Jones clothes his creations in light and clinging drapery, and decorates the canvas with flowers delicate and graceful, or draws, with patient labour, every leaf and every stone, Watts gives to his drapery the heavy curves and shadows, and suggests, rather than draws in detail, massed flowers and high battlements proper to his figures.

I make this contrast in order to draw particular attention to Burne-Jones's love for line and minute detail. Fine drawing is always suggestive. The artist first gets an intimate knowledge of form; he draws the human figure in outline, an outline that is supple and informing, explaining as it does the structure it bounds, whether muscle or bone. But in after years he is apt to simplify this proceeding until at last the outline is only suggested; but the solidity, the play of light and shade, the character, and the action are all merged in one, and the figure is artistically complete. The great realists, such as the pre-Raphaelites, pin their faith largely to the outline, which often in their hands reaches an extraordinary refinement.

If you follow the outline in Watts's "Sir Galahad," you will find it simple, and you will sometimes find it disappear; in other paintings by him it is almost impossible to detach the outline from the background. But in Burne-Jones this bounding line is everywhere distinct. It turns with the utmost suppleness and beauty; it is delightful for itself and quite apart from the object. It reveals the artist who by dint of labour and unceasing endeavour has succeeded in conquering all its secrets; it is peculiarly the mark of an early and refined school.

Burne-Jones was first and foremost a designer for tapestry, mosaic work, and stained-glass decoration for church windows. In all these applied arts the outline is a necessity; the habit he had formed persisted when he came to paint "easel pictures"—that is to say, paintings for themselves, and without any intention to carry them out in a material. It is time to look at a few examples.

"The Hesperidean Maidens."

In a mysterious garden, thick with flowers, where the sun shone, and storms were unknown, there grew the sacred tree whose fruit was

> "Of pure Hesperidean gold
> That smelt ambrosially."

Such a gift had the great Earth spirit given to Juno on her marriage with "cloud-compelling Jupiter," the fame of which gift had spread through the three kingdoms of Olympus, the earth and sea, and the lower world. Envious eyes were turned to the divine fruit, and since the gods themselves, and especially Mercury, the light-fingered one and patron of filching mortals, were not to be trusted, much less the inhabitants of the earth, Juno surrounded the garden with a fence, and threw down a fell dragon to guard it night and day, while three star-born maidens, the Hesperides, were appointed to tend the fruit and hymn its praise. And so dreadful and close was the guarding that to pluck some of the fruit and bear it away was appointed as one of the twelve labours of Hercules. Ancient stories tell how the hero vanquished the dragon and succeeded in his quest.

The artist's design shows the three "daughters of the gods, divinely tall, and most divinely fair," dancing around the tree, sedate, sad-eyed, and stately in their movements, not carried away in a wild delirium, but moving with the grace of the Athenian girls on the Parthenon frieze, who, with musical instruments, advance to sing the praises of their goddess and protector, Athena. The light tripping measure is indicated by the close placing of the feet and by the easy movement of the beautiful drapery; the dragon, here reduced to a symbol, twirls in lithe spirals about the tree, and follows the motion of the dancing girls with his head.

The golden fruit shines in the tree; roses bloom in the garden, and flowers break out under the dancers' feet:—

> "At their feet the crocus brake like fire,
> Violet, amaracus, and asphodel,
> Lotos and lilies."

A wall is seen at the back, beyond which the sea glows with the setting sun.

Of course this picture is a decorative design. All pictures are decorative in a sense, though some are more obviously so than others. In this the tree forms the central feature, and the two girls, to right and left respectively, are inclined at equal angles to it, while the third girl repeats the action and balances the composition by approaching the one on the right, as the serpent and the tree trunk bend to the left.

There are no empty spaces. Burne-Jones has been blamed for so persistently filling every nook with ornament; but this is, I think, to forget that such designs as the "Hesperidean Maidens" were to be worked out either in needlework, mosaic, or stained glass, where the tiny sparkling colours would be no more out of place than they were in the old Ravenna mosaics or in ancient church glass. Decorative pictures must not be

"Evening Peace." (Sir E. Burne-Jones.)
From Messrs. Nelson's Literary Reader, "Golden Gifts." Photo by Hollyer.)

judged by the same standards as apply to easel pictures designed to hang on a wall.

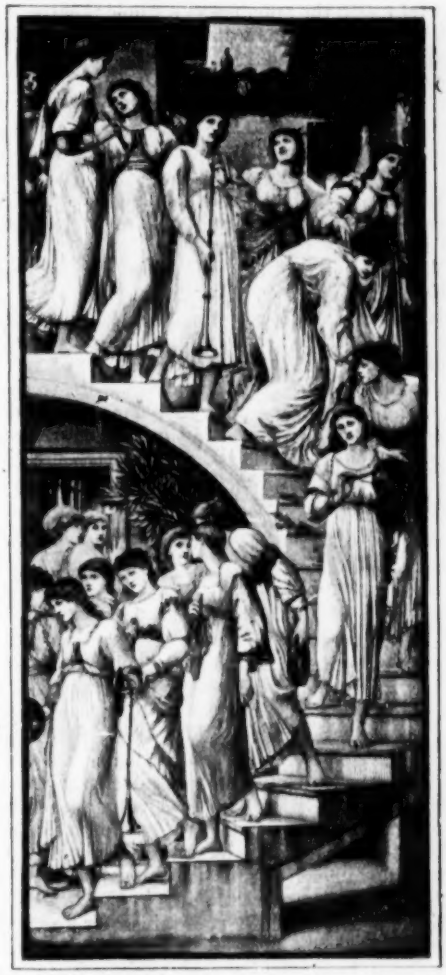
Burne-Jones's beautiful drawing must be patent to all—the delicate limbs, feet, and hands, the exquisitely composed drapery. There is little expression, save a half-melancholy, in the faces; but the artist so persistently keeps this character in his designs that it could hardly have been through inability. Moreover, in his "Masque of Cupid," there are at least two sneering and cruel faces; in his "Lancelot" there is a half-suggestion of a frown. But still it must be conceded that he shows little power at delineating character, differing widely in this from Watts, and even from his ancient masters, Botticelli and Donatello. The type he chose for his grave women appears with little variation—the wide-set, large eyes, the straight nose, small upper lip projecting beyond the nether, long chin, and oval face. He showed much more variety in the hair, sometimes braiding it, sometimes letting it hang free, but always modifying it to be decoratively beautiful.

"Evening Peace."

The type is more clearly shown in this larger picture. It is curious to note that even when Burne-Jones attempted a portrait (and "Evening Peace" is probably a portrait) he read into the features the type he had formed in his mind for his decorative panels. His portrait of the pianist Paderewski is reminiscent of Lancelot and of Lamorak—the straight profile, eye close under the brow, short upper lip, and abundant hair; and with much, too, of the half-stern expression in these, as in his Virgilian Æneas.

But while "Evening Peace" is probably the portrait of an English girl, he gives her a mediæval Florentine setting, showing an ancient Italian house, and the hills beyond that rim the city like a wall. There is less sadness in the face than is usual with Burne-Jones, and more a suggestion of the calm implied by the title. It is a beautifully decorative picture for all that; the head justly placed midway between the sides of the frame, close to the upper edge, and with a wider space beneath the balcony, which really forms the limit of the picture. Just so, the old illuminators placed their sacred figures, whereas modern portrait painters would make a less formal setting.

His feeling for decoration comes out strongly in the



"The Golden Stairs." (Sir E. Burne-Jones.)
(From Nelson's Literary Reader, "The Enchanted Garden." Photo by Hollyer.)

shadows on the quiet hills—shadows which not only suggest the evening, but which lead towards the face while they frame it round.

"The Golden Stairs."

In appraising a picture, the artist and the general public view it from opposite poles, the latter asking for meaning, story, historical illustration, the former fastening upon the drawing, the light and shade, the colour, the composition—in short, upon technical qualities quite apart from the subject. The public asks, "What does the picture mean?" The artist rather puts the question, "How does it look?"

The questions have their parallels in instrumental music, to which, as an afterthought, the composer may give a title that shall commend it to the public, but which, to the musical artist, is mainly convenient as a title in a catalogue. Who asks the *meaning* of the "Songs without Words"? Here and there separate names have been added as perhaps applicable to the measure, but the musician asks not, "What does this mean?" but rather, "How does this sound?"

In other words, pictures that show little artistic power may deal with the most exalted subjects, and while they gain the applause of a whole theatre, will only make the judicious one grieve, the censure of which one is popularly supposed to be worth more than all the rest together.

But surely if pictures come up to a high artistic standard, and at the same time convey a message or teach a truth, this must be counted to them for righteousness. It is only when the "literary picture" is exalted at the expense of craftsmanship that complaint may be made—when the watery bathos of some amateurish print is mistaken for fine art.

"The Golden Stairs" is fine in drawing, in composition, in knowledge. At the same time the subject is pleasing. The picture might have come from an early Italian studio; it would be apt company both in subject and treatment for Botticelli's "Spring," where the wood-nymphs dance among the flowers to the sound of music, where every note that Flora sings drops to the earth as a blossom. The golden stairs are made golden by golden youth. Did the artist have in mind both Botticelli's "Spring" and Tennyson's verses on "Early Spring"?

> "Opens a door in heaven;
> From skies of glass
> A Jacob's ladder falls
> On greening grass;
> And o'er the mountain walls
> Young angels pass."

It would be quite in accord with his practice to reduce such a vision to a deliberate and balanced design, which should be satisfying for its lines, its composition, its grace, and sentiment. For once he has given a cheerful turn to his thoughts, and though the maidens walk soberly and demurely, there is a brightness and a vivacity in their action that is more expressive of pleasure than appears even in the dancing "Hesperidean Maidens." This is especially notable in the upper half of the drawing, where the actions contrast sharply with the stately movements of the figures in the lower half; an effectively skilful contrast maintained for a set purpose.

For Burne-Jones was an accomplished designer, maintaining both dignity and variety by contrasting free lines with stiff, just as one sees the springing flowers wave gracefully from a formal stem.

Apart from the beauty of drawing, which is as apparent in the drapery as in the figures, the "Golden Stairs" is marvellously schemed for effect. For instance, in order to keep the figures nearly of a size, the old painters often resorted to the plan of placing their figures along a hillside; and this occurs again and again in Flemish glass painting, where the principal figures are arranged along a spiral path ascending a hill. The "Golden Stairs" could be worked as a mosaic, or a glass painting, or a tapestry. In all cases, it would be most important to maintain a just balance in the size of the figures, particularly when they are made to advance in line.

Most designers (and many portrait painters) are fond of the serpentine line in a composition; and where this movement is suggested, as in this winding staircase and in the "Hesperidean Maidens"—where you may trace it through the swinging drapery as well as in the coiled snake—the artist deliberately introduces upright and severe lines to control the movement and render it harmonious, since harmony can come only from combination and contrast.

Look at the picture and see how many upright lines are introduced. Not only are there the uncompromising doorways and the wall edges, but three of the figures are particularly straight, and, moreover, these carry the longest musical instruments, which they hold perpendicularly. One of the figures is above—she carries a long trumpet; another similar figure is below her a little to the left; while the third, at the bend of the stairs, poised, momentarily, on a limb clothed with drapery hanging in straight lines, bears a violin upright.

And for fear such upright lines might not sufficiently keep the serpentine lines in control, horizontal lines are frequently introduced in such compositions. In the "Golden Stairs" you may detect them not only in the steps, but also in the rafters and in the doorways.

It is true, such care for composition has little to do with the subject, but it is full of interest to the art student, who recalls endless examples in ancient and modern works. He knows, too, that artists have drawn numerous lines through and about their figures—most skilfully hidden, but connecting and harmonising them with one another.

The ancient Greek sculptor of the Parthenon frieze did not neglect them; the finest painters of the Middle Ages (Italian, French, Spanish, and Flemish alike) swung these sinuous lines everywhere through their pictures. Imagine how the "Golden Stairs" would look if the figures were to advance in Indian file like a row of marching soldiers! But if you look closely enough, you will be able to trace beautiful lines running from one figure to another, sometimes through the drapery, sometimes through the limbs, and at others round the heads. The only break occurs at the bend of the stairs, but here the curved figure, whose head is only partially seen, continues the arc that both enframes the lower group and forms the base line upon which the upper group moves.

In pictures, interiors are apt to be oppressive. It has been the custom for centuries to let in the air, and give a suggestion of the country and the sky, by throwing open the windows and doors. Often a pretty landscape is shown beyond. Burne-Jones lets in the blue sky through the roof, and leads his procession of musicians towards an open door. This device at once lightens the composition.

And beyond these skilful devices, important as they

may be, we look for poetry in pictures. The most scholarly painting may yet be mechanical; but the sensitive artist reveals himself, not in the subjects he selects, but in the way he looks at the smallest detail. He may lose the leaves of a tree in a general roundness, and yet the effect may be so delightful that we recognise at once how he felt the grouping of foliage, or the play of light, or the atmosphere that enwrapped the tree.

In Burne-Jones's painting his feeling for exquisite outline, for grace and refinement, for delicacy in light and movement, attest the poetical artist and not the mere mechanic. If he had used words as his vehicle instead of paint, we might have expected a second Keats, a modern breathing the ancient and classical air. He sought for beauty everywhere. He admitted no harsh feature, and seemed dead to the coarse, workaday world, which, after all, has inspired the most moving art. He drew designs based on ideal nature, not strong ideals, perhaps, yet charming for their grace; and the almost uniformly sad expression in his men and women was only a reflection of his own gentle melancholy—an intellectual sadness rather than one caused by a distracting and distracted world.

DRAWING IN PUBLIC ELEMENTARY SCHOOLS.

I.—GROVE ACADEMY, BROUGHTY FERRY.

BY W. RYLE SMITH.

Junior Division—Part I.

IN the classes of the junior department the pupils number from forty-five to sixty, and are in charge of fully qualified teachers. Here the work is arranged in sections, each of which is taken up and carried on until the pupils have acquired a certain facility in the delineation of the various objects coming under the section. Two lessons per week are given, each of one hour's duration, these hours being from ten to eleven, when the light is good. As a rule a day intervenes between the lessons, but in some cases consecutive days are taken, and this is found to be an advantage, especially during the season of flower study. The work of the session is broadly grouped as follows.

From the beginning of March till the middle of April tree-twigs and the early spring garden flowers—crocuses, tulips, and lilies—are studied; then follow the wild flowers, such as the lesser celandine, kingcup, primrose, broom, campion, etc., till the end of May.

A plentiful supply of wild flowers is brought in from day to day by the children, many of whom live on the outskirts of the town or a mile or two out in the country. The teacher is provided with a large basin or crock in which the flowers are kept fresh. As regards the provision of garden flowers the school is allowed a certain sum per week by the School Board. During a lesson every child is provided with a specimen if possible, although in some cases two pupils draw from the same flower.

The flower is placed in a small test-tube filled with water, and is held up by a simple wire arrangement, the end of which is stuck into a hole pierced in the desk; a background of white paper is propped up behind. We have found this to work very well. At the end of the lesson the test-tubes are all collected and arranged on a perforated board to be ready for next lesson. In this way the flowers may be kept fresh for several days.

During the months of June and July the children take up the study of "common objects," varied by shells and other objects of interest picked up during nature study rambles.

September is devoted to the later garden flowers—sweet pea, nasturtium, etc.—and October to sprays of autumn-tinted leaves—beech, Spanish chestnut, etc. The pupils of Standard I. work mostly from single leaves, Standards II. and III. from small sprays.

In November, December, January, and February common objects are again taken up along with memory and imaginative drawing, scale or ruler work, and clay modelling. No hard-and-fast rule is laid down at this period as to the time devoted to each section, as much depends on the progress and skill of the pupils. The teacher is also at liberty to introduce any seasonable study, as fungi, mistletoe, and holly, and the work is varied in such a way as to keep the interest of the pupil at its highest.

Nature study and drawing are correlated as far as possible, and we find that the pupils take the greatest interest in the drawing of a plant, the structure and growth of which have first been discussed. Specimens found are named, exhibited, and drawn, and much enthusiasm is aroused when a class undertakes to collect all those species belonging to one order of plants which are to be got in the district, such as the buttercups and the crossworts. The following tree-fruits make interesting studies in form and colour-contrast—horse-chestnut, ash, lime, sycamore, white-beam, sea-buckthorn, laburnum, wild-rose, and hawthorn. In nature drawing the greatest care is exercised by the teacher to prevent looseness of execution; the blackboard is constantly in requisition, the children's attention being directed to details of leaf and stem junctions, stem markings, buds, turn-over of leaves, veining, and many other details relating to flowers, fruit, shells, etc. No child is rushed. On the contrary, it is the aim of the teacher to restrain all attempts to finish in a given time at the cost of careful work. If the specimen in hand is not finished during one lesson, it is resumed next day, the same or a similar specimen being given out. Yet each day's work may be made complete in itself, although the whole flower or spray, etc., has not been drawn.

Nos. 5 and 8, Plate I., are the work of pupils of Standard I.; Nos. 3, 6, 9, and 10 from Standard II. pupils; Nos. 1, 2, 4, and 7 from Standard III. All these examples are done in water-colour, with the exception of Nos. 5 and 8, which are represented in crayon. The colour-box recommended and mostly in use is Messrs. Reeves' 1s. box, the "Cheapside." The children provide these themselves. For green bice we substitute cobalt (which is not included), preferring that the children should find greens from the combination of blues and yellows.

The common objects for drawing in the infant department are of a more or less miscellaneous character, and are chosen as being things of interest to the children, although at the same time due regard is had that they

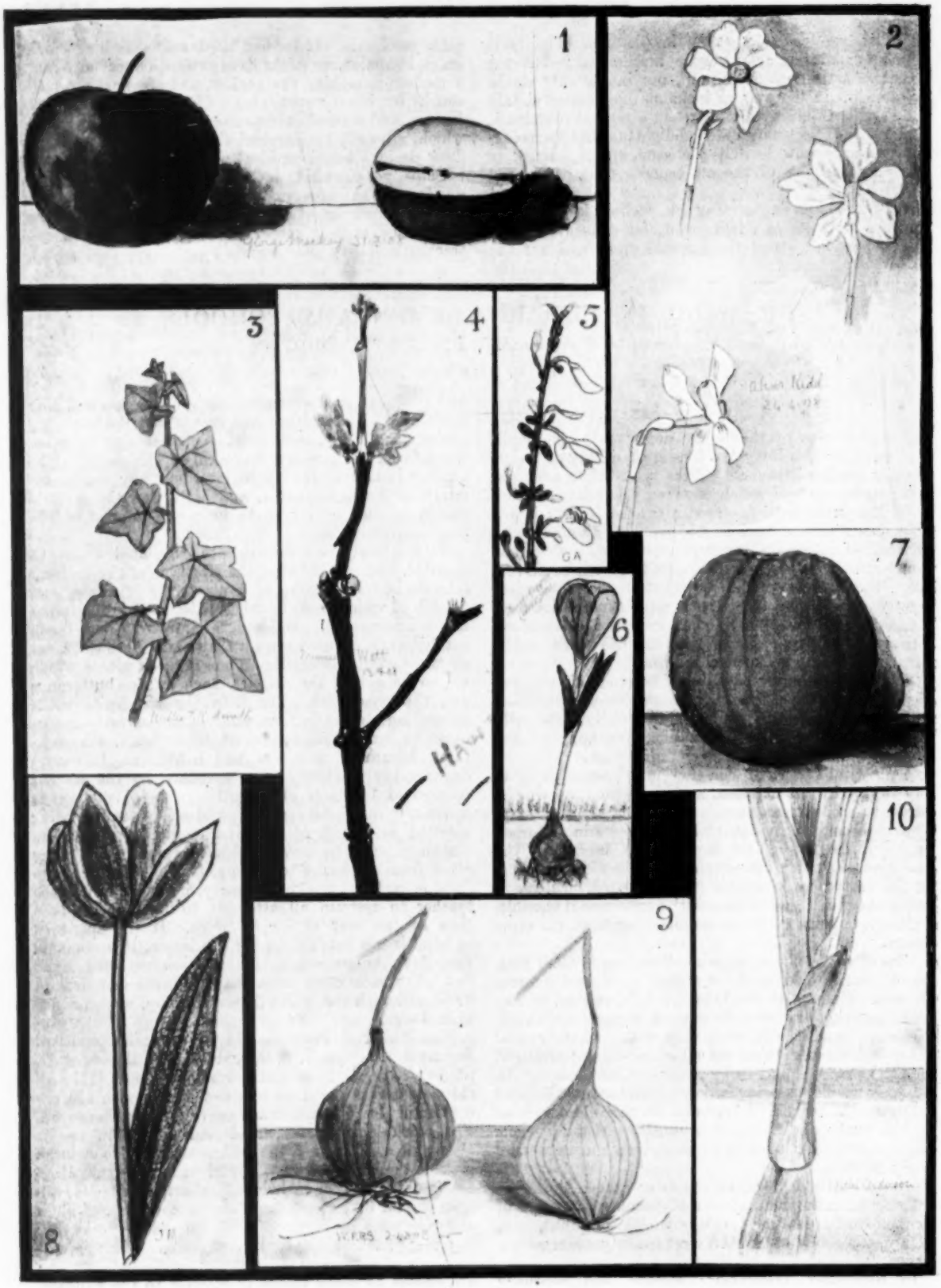
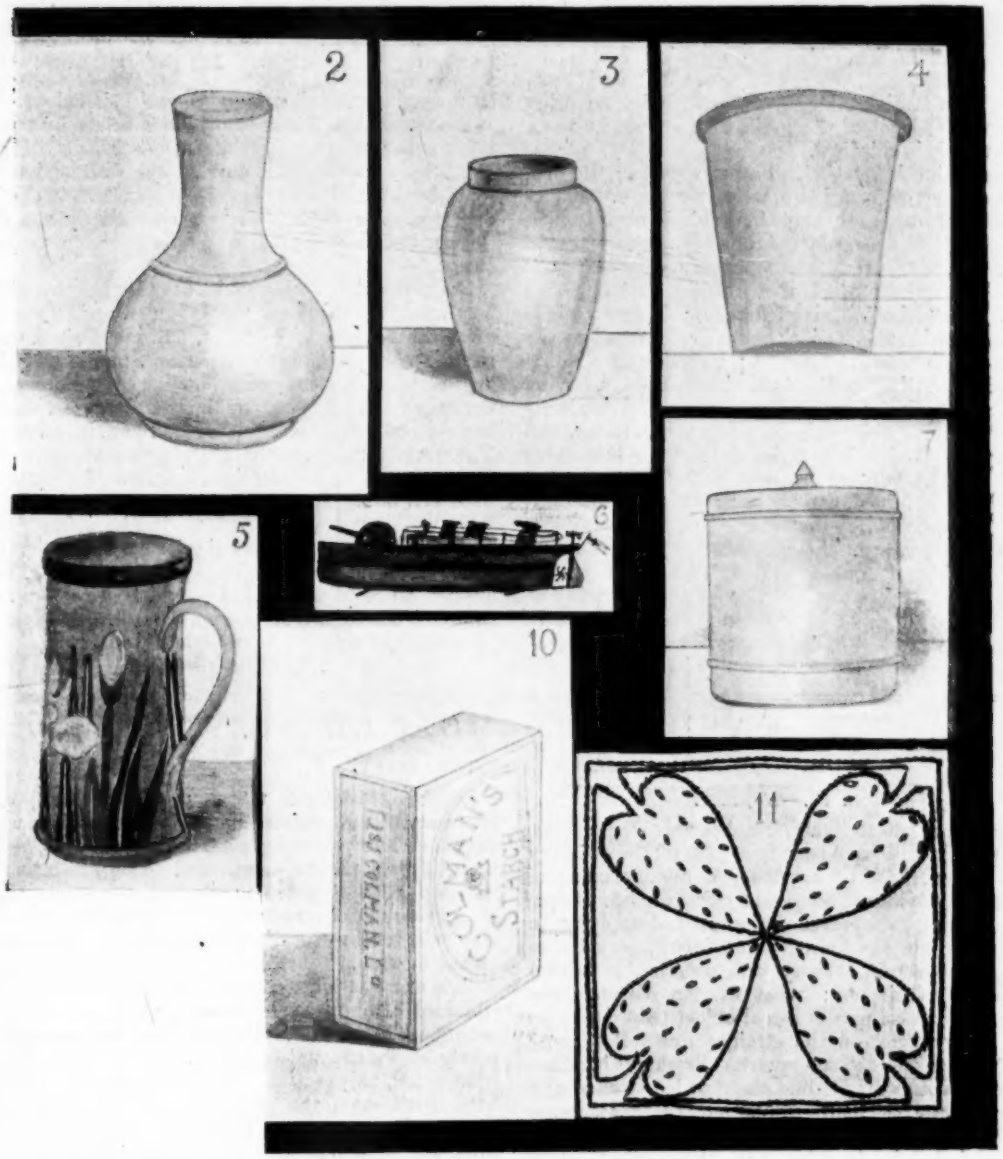


PLATE I.



8 PLATE II. 9

are within the scope of the children's first efforts. In the junior department this branch becomes more systematised, and certain typical forms are taken up. A series of lessons is given on horizontal circles in various positions. The teacher demonstrates to the children the change that takes place in a circle as it is raised or lowered above or below the eye. The children are each supplied with a cylindrical object such as a jelly-jar or

cocoa-tin, and are directed first to get the upper end on a level with the eye and to observe that it is in the form of a straight line. They are questioned as to the form of the lower end, when, as a rule, the reply is that, "It is also a straight line." The suggestion to bring the top to the level of the lower end reveals to them the fact that it is elliptical.

The operation is repeated *above* the level of the eye, and the change of form is impressed on them. Blackboard drawings of these changes in the circle when applied to one or other of the objects mentioned are made to a large scale, and afterwards repeated on paper. Care is taken with the outline of an object that is to be shaded. The "wire" line is condemned; demonstrations are given showing the outline that easily merges into the shade or shadow of the object; methods of shading are shown and discussed. Then simple objects having the form of cylinder or cone are attempted. A wide range of common objects is based on these forms, and with suitable gradation can be utilised for Standards I., II., and III. Objects are chosen of which a number may easily be obtained, and these are placed at intervals throughout the room, so that each child sees the object to the best advantage. As was mentioned in regard to nature drawing, no one is expected to rush with an object drawing. Two or three days are devoted to one object, and every child is trained to be deliberate in all that is attempted. The drawing lesson being at the same hour each day, no difficulty in regard to the amount of light is experienced. If, however, the lighting of a room presents any difficulty in the way of cross-lights—as is often the case—backgrounds are improvised for the objects, and are made of brown or white paper, according as the object is light or dark in colour.

Examples Nos. 5 and 10 on Plate II. are by Standard III. pupils; Nos. 2, 3, 4, and 9, by Standard II.; and No. 7 by a Standard I. pupil. The perspective representation of straight-lined objects by pupils in the junior department is not attempted until nearly the end of the session in each class, and only then to a very slight extent.

Scale drawing is begun in Standard I. by giving a few lessons on the use of the 12″ ruler, until the children are quite familiar with inches, half-inches, and quarter-inches. A few simple forms such as squares and oblongs are drawn, then actual things having these shapes. This is continued and expanded in Standards II. and III., the objects being drawn either full, half, or quarter size. The pupils measure the objects themselves. No. 8, Plate II., shows a box drawn actual size by a Standard III. boy.

Space-filling was referred to in the infant scheme, and this is continued in the junior classes, although the time for it is very limited. In Standard III. it is applied to needlework, and the girls in this standard complete one or two simple mats (see No. 11, Plate II.), handkerchief sachets, or tray-cloths, etc.

(*To be continued.*)

CARDBOARD MODELLING.

BY FELIX T. KINGSTON, BARRY.

Model 13.—A Tray.

BY the time that the pupil reaches this stage of the course he will have learnt, as part of the ordinary drawing lesson, how to construct a regular octagon, which figure provides the basis of this exercise. Cardboard modelling here serves the purpose of applying to some definite end the learner's previous knowledge of drawing, of connecting theory with practice, of linking elements with their use; what was an *abstract form* becomes a corporate part of a real object (Fig. 16).

Draw the octagon on the straight line AB 2″ long (Fig. 17), using the 45° set-square. Presupposing that the ruler is used as a base-line along which to slide and fix the set-square, the figure will be put together thus:—Draw AB, and without moving the ruler draw AH, AF, BE, BC of indefinite length; mark the points C, H 2″ from B, A respectively; join CH, and use it as a new base-line for the ruler; draw HG, CD of indefinite length, and mark the points G, D 2″ from H, C respectively; with ruler still placed along CH (or along GD if more convenient), draw GF, DE. The lines AF, BE will now be seen to serve the double purpose of discovering errors and of facilitating their removal.

Draw the diagonals and produce indefinitely in both directions (note that the intersection of the diagonals affords one of the simplest, yet severest, tests of the regularity of a polygon). Draw the circle, radius 1″ more than half the diameter of the octagon. Mark off points on the circle ¼″ on each side of its intersection with the diagonals (theoretically this is open to serious objection, for it amounts to measuring rectilinear distances along a curve, but for so short a distance the curve in this case is practically a straight line). Join these points to A, B, C, D, etc.

Before cutting out the figure (thick lines) do the necessary scoring (dotted lines), taking special care with the short lines. When gluing, begin (say) at A, and then proceed with the flap at C, and so on alternately. If the flap at B is glued up immediately after the one at A, the consequent handling of the side AB of the tray will tend to loosen the joint at A. Fix the flaps on the outside.

This exercise takes a longer time and exacts a higher standard of accuracy in drawing than any of the preceding. The extra length of time is accounted for partly by the amount of gluing. As the flaps are somewhat small, this section of the work must be performed with great care, the whole of the flap being evenly coated with seccotine. Moreover, at this stage of the work the model is fast assuming its final shape, and there is the usual tendency to hurry, caused by excitement and curiosity as to what the model will look like; the result often is that flaps hastily fastened become loose, and glue finds its way to the fingers. Flaps should be stuck securely the *first time;* resticking is too often a failure. The pupil will learn that impatience does not pay.

Model 14.—A Stool.

Draw the rectangle ABCD 12″ × 2″ (Fig. 18), and subdivide it into six two-inch squares. With radius of 1⅛″ draw the semicircles. The hexagon may be constructed on any one of the subdivisions of AB. Add flaps ¼″ wide where indicated. At X, X enough of the corners of the flaps must be cut away to prevent their overlapping when the model is fastened together. Fix the flap CD, and let it thoroughly dry before handling the others. Glue the remaining flaps, and fix in position. Turn the model upside down upon the desk,

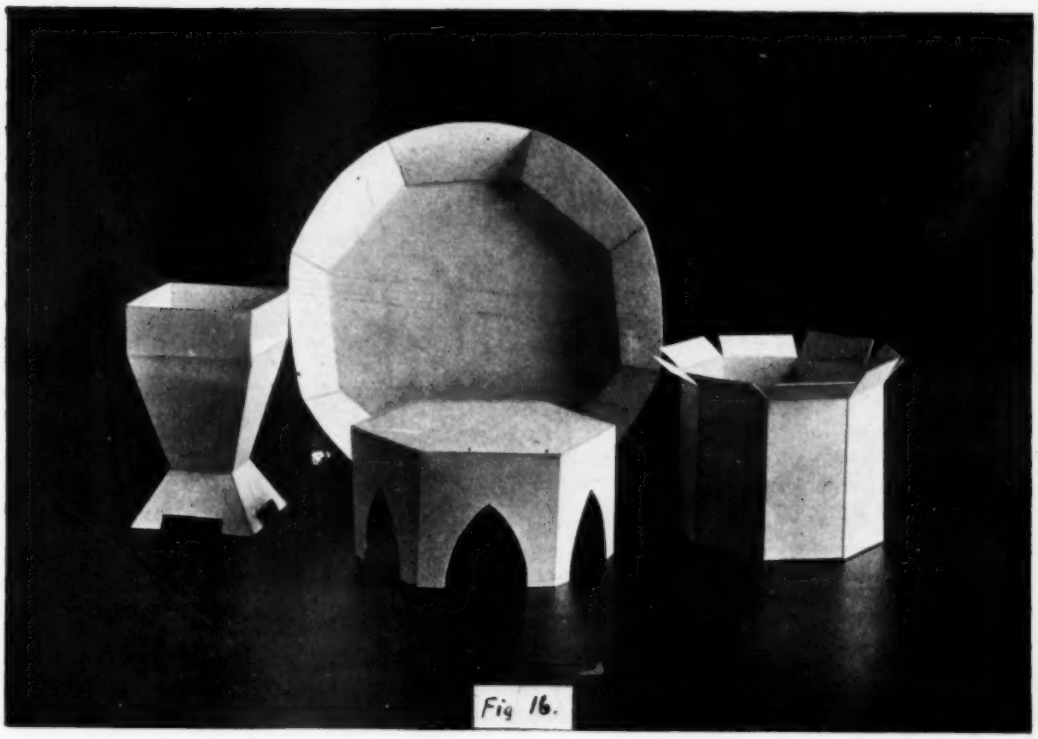


Fig 16.

and press the flaps from underneath with (say) the blunt end of the pencil.

This exercise, like the last, demands a high standard of accuracy, especially in the construction of the hexagon. The pupil will learn from experience that what appears a faultless figure will often, when put to the test, produce a sad misfit. He must reap a sheaf of errors unwittingly sown; but he will also learn the unvarying truth, that a really accurate drawing cannot produce a misfit.

Model 15.—A Vase.

This model contains little that is new to the worker, but it will somewhat tax his patience, the time required for its construction being rather great. As previous exercises have proceeded step by step from the brief to the lengthy, this heavy strain on patience is not insupportable; it has been anticipated and prepared for. Similarly throughout any course no insuperable difficulty of any kind should suddenly be sprung upon the child; the grading of exercises must be so thorough that his experience up to any point of the course may enable him to proceed unaided from that point.

The vase consists of two parts. For the top part, draw the rectangle ABCD 8″ × 2¾″ (Fig. 19*a*), and subdivide as shown, adding afterwards the square 1″ side, and also flaps ¼″ wide where necessary. Score, cut out, glue together this part of the vase. For the bottom part draw the 3″ square (Fig. 19*b*). Fasten both parts together by spreading a thin even coating of glue over the bottom of the vase, keeping it well out towards the edges.

The diameter of the base of this model is the same as the diameter of the top—namely, 2″; a simple test, therefore, of the correctness of the product will be to place it on its side and lay (say) a ruler along the top, when the ruler should lie quite flat and parallel with the ground. It is a good plan also to let one child

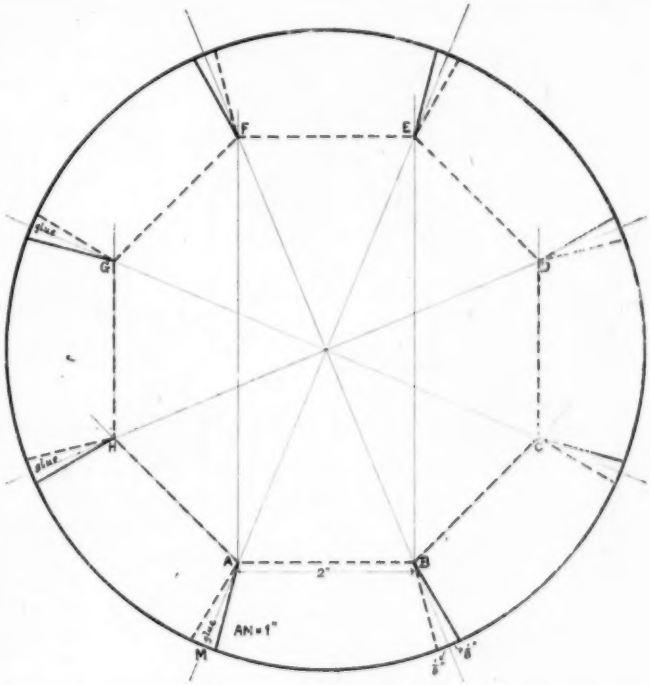


Fig 17.

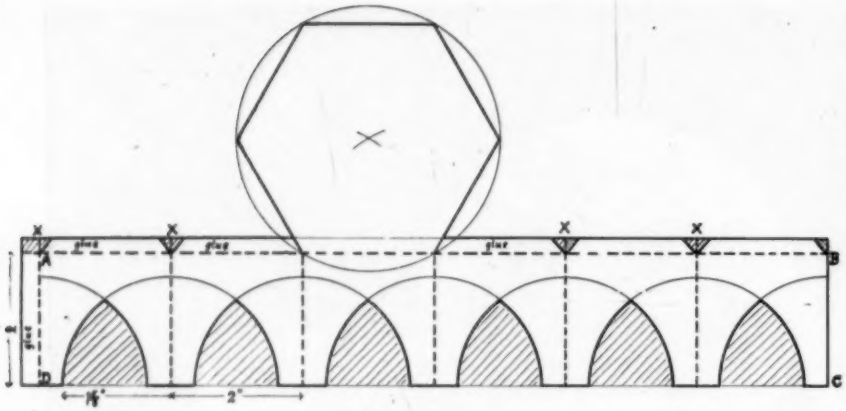


Fig 18.

measure his model by that of another; if on such comparison a difference appears, each may try to discover the errors in the other's work.

that of No. 14. Begin with the rectangle ABCD 10″ × 3″ (Fig. 20). It will be found that the octagon demands more skilful manipulation than the hexagon, chiefly because of the frequent alteration of the position of the ruler and set-square in constructing it. This is why its introduction has been postponed to the concluding part of the course.

Note that the line XY must be scored on the *back* of the cardboard; to avoid errors leave both the drawing and the scoring until the model has been cut out. When the model has been fixed together bend outwards the small rectangles *a*, *a* at the top, trying to make them remain steady at the

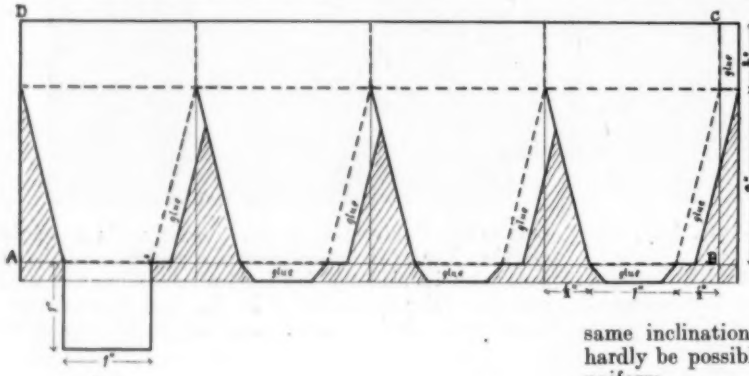


Fig 19a.

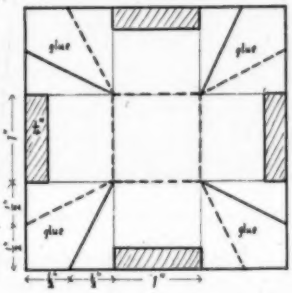


Fig 19b.

same inclination to the sides of the vase. This will hardly be possible unless the scoring of the line XY is uniform.

We reach here the end of the present stage. The

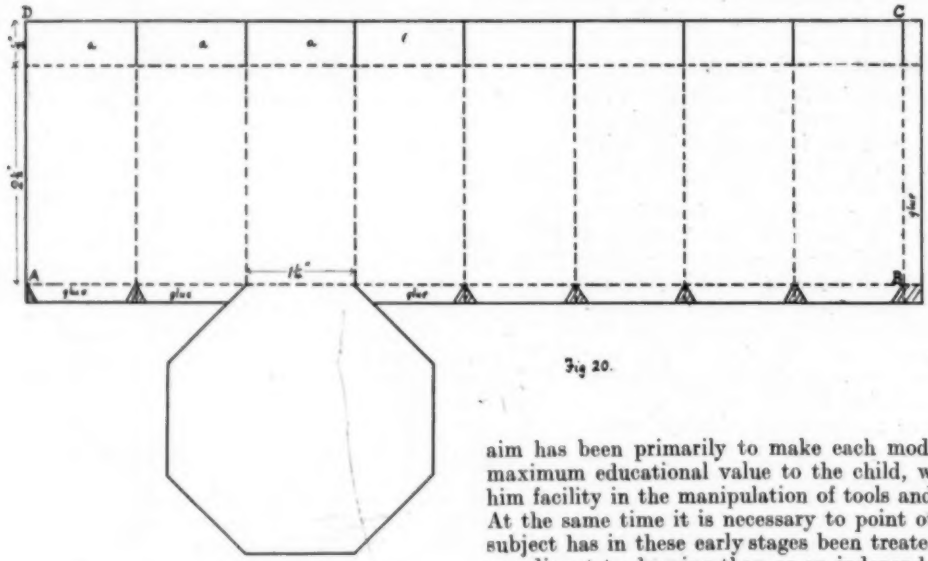


Fig 20.

aim has been primarily to make each model yield its maximum educational value to the child, while giving him facility in the manipulation of tools and materials. At the same time it is necessary to point out that the subject has in these early stages been treated rather as an adjunct to drawing than as an independent manual occupation. This prepares the way, however, for a broader treatment of the subject in the succeeding stages.

Model 16.—A Vase.

Further practice is here afforded in the regular octagon. The principle of construction is similar to

DESIGN.—STAGE I.

BY W. R. BULLMORE.

May 13, 1908. 6 *to* 10 *p.m.*

EXTRACTS FROM THE GENERAL INSTRUCTIONS.

"YOU must select one (and one only) of the following exercises, and execute it not merely in pencil nor in outline, but in water colour. That is to say, the design must be washed in to show dark against the ground, or the ground washed in leaving the design light upon it..... The same maximum of marks is allotted to each.

"An outline (pen or brush) may or may not be used, but the pencil lines should not be left to form part of the design. The colour wash need not be absolutely flat, but there should be no shading, nor any attempt at relief. The colour should define the design, not confuse it.

"The drawings should be neither vague nor sketchy, but precise and clean.

"Leave your constructional lines in pencil.....

"In all cases the measurements given in the diagrams must be adhered to."

N.B.—The Examiners' "reports" on the examination are printed in italics.

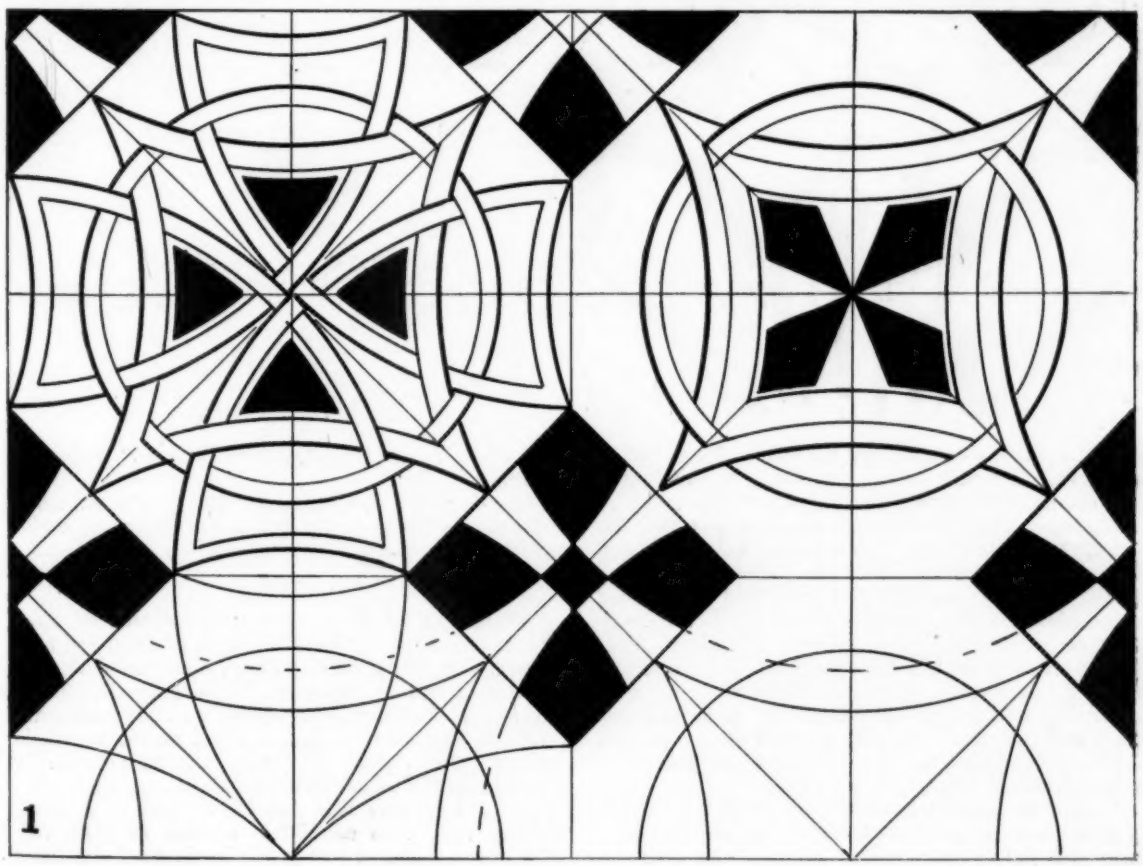
I.

"Design, in black and white only (tones of gray must not be used), a diaper pattern on the lines shown in Diagram A. The foundation of this is a regular octagon inscribed within a 4½-inch square. The design may be geometric, or else conventional plant form. The lines of the diagram must form part of the design. Three octagons must be shown, but only one octagon and one small square need be completed."

(In previous years the examiners have frequently complained of the use of incorrect measurements and geometric figures wrongly constructed. The construction of the octagon is a frequent stumbling-block. In Fig. 1 the usual method of inscribing a *regular* octagon in a square—namely, to describe at each angle of the square a quadrant with radius equal to half the diagonal—has been used as the basis of the design for the left repeat. The other, a very simple repeat, may be used to alternate with this, as suggested in the figure, or each octagon may be similarly filled, using either repeat. The dotted lines of the lower portion indicate the construction of smaller squares. All the curves have their centres at the angles or the centre of the large squares of 4½-inches side. Fig. 2 is a conventional plant treatment of the same question.)

This is a satisfactory class as a whole, and an advance on the exercises in black and white of previous years.

A few candidates giving colour for black and white have been rejected in consequence. Others have lost marks through leaving the small square blank, and some have



avoided the direction that the lines of the diagram must form part of the design.

One candidate gives an excellent device, in which two birds are the leading feature; a discount has been made in this case, as a geometric design or conventional plant-form was demanded.

II.

"Design, in not more than three colours, or three tints of one colour (white, if used, will be counted as a colour), a scroll ornament to fill the space shown in Diagram B." Or,

"Design, in not more than three colours, or three tints of one colour (white, if used, will be counted as a colour), an interlacing ornament to fill the space shown in Diagram C."

(To save space, only parts of Figs. 3 and 4, in answer to these questions, are shown, but the whole of each should be drawn. It would, however, probably be sufficient if only one-half of a pattern like Fig. 4 were coloured.)

The scroll is much better understood this year than has been the case formerly, but there is a tendency to give floral devices arranged on a scroll basis rather than genuine scrolls. Sometimes detached ornaments and conventional leaves, which are usually associated with scrolls, are substituted as being scrolls in themselves. Sometimes a few tendrils are supposed to make a floral design into a scroll; again, in some cases, very fine stems are arranged as scrolls, but are entirely overpowered in mass by heavy leaves and flowers. Some very doubtful scrolls have received a discount, but have been accepted by the Examiners as honest attempts to answer the question.

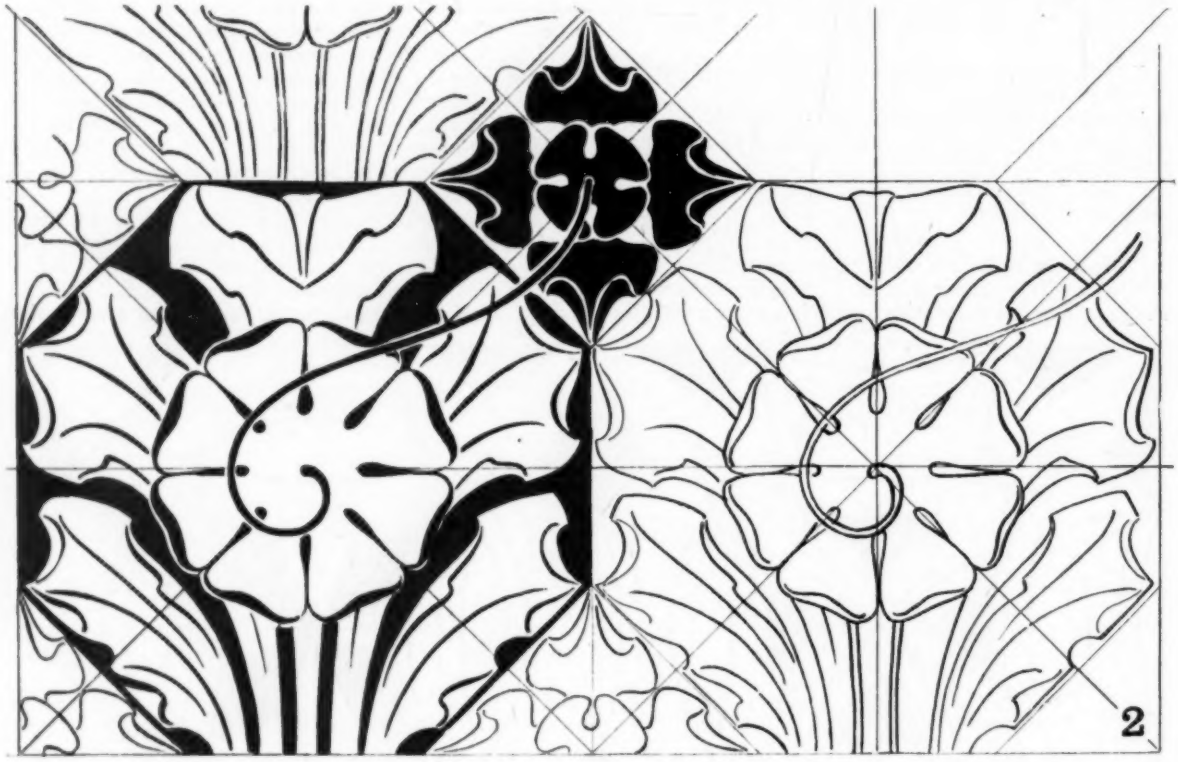
Many of the papers submitted in answer to Exercise II. C. by the more advanced students are very disappointing. They quite fail to recognise that an interlacing ornament to be effective must have the interlacements carefully designed, and that it is not every style of ornament which is appropriate to this kind of treatment.

The more realistic plant-forms are frequently unsuitable for systematic interlacement, and in consequence students who have used them appear to have avoided interlacing as much as possible. In some cases none whatever is shown, the result frequently being an ornament which is good enough in its way, but no answer to the question.

The most conscientious attempts to answer the problem have frequently been made by the weaker students, some of whom have thus gained higher awards than those more accomplished.

A few candidates have mistaken simple piercing for interlacement.

In some designs where the interlacement might have occurred, it is not properly shown, in others it is very doubtful.



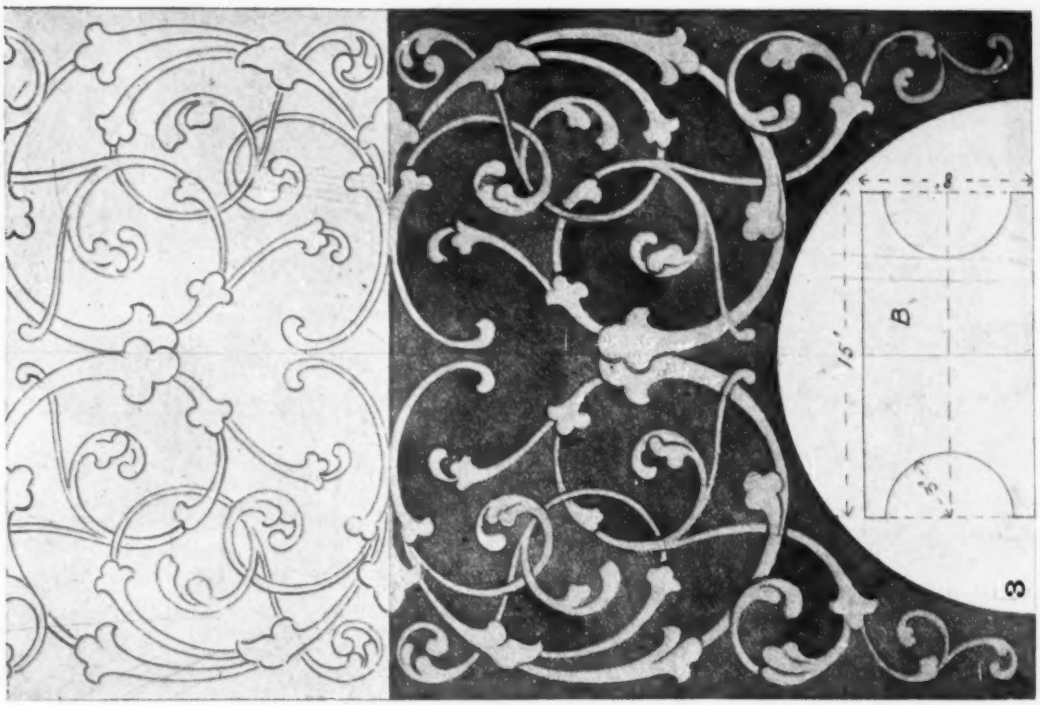
Altogether there is a lamentable lack of comprehension of the usual expression employed in denoting a very useful and distinctive kind of ornament.

III.

"Design, in not more than three colours, or three tints of one colour (white, if used, will be counted as a colour), a repeating floral pattern, constructed upon a series of diamonds, as shown in Diagram D. Three repeats must be shown, but only one need be completed."

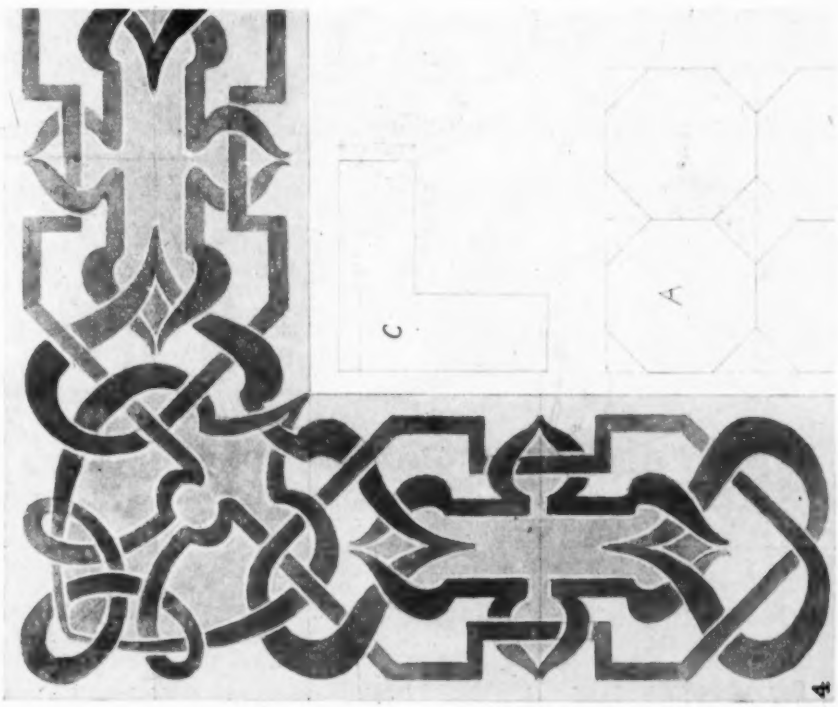
(Fig. 5, in answer to this, is based on the vegetable marrow. Two repeats are shown. Another should be drawn to fill the other diamond of the diagram.)

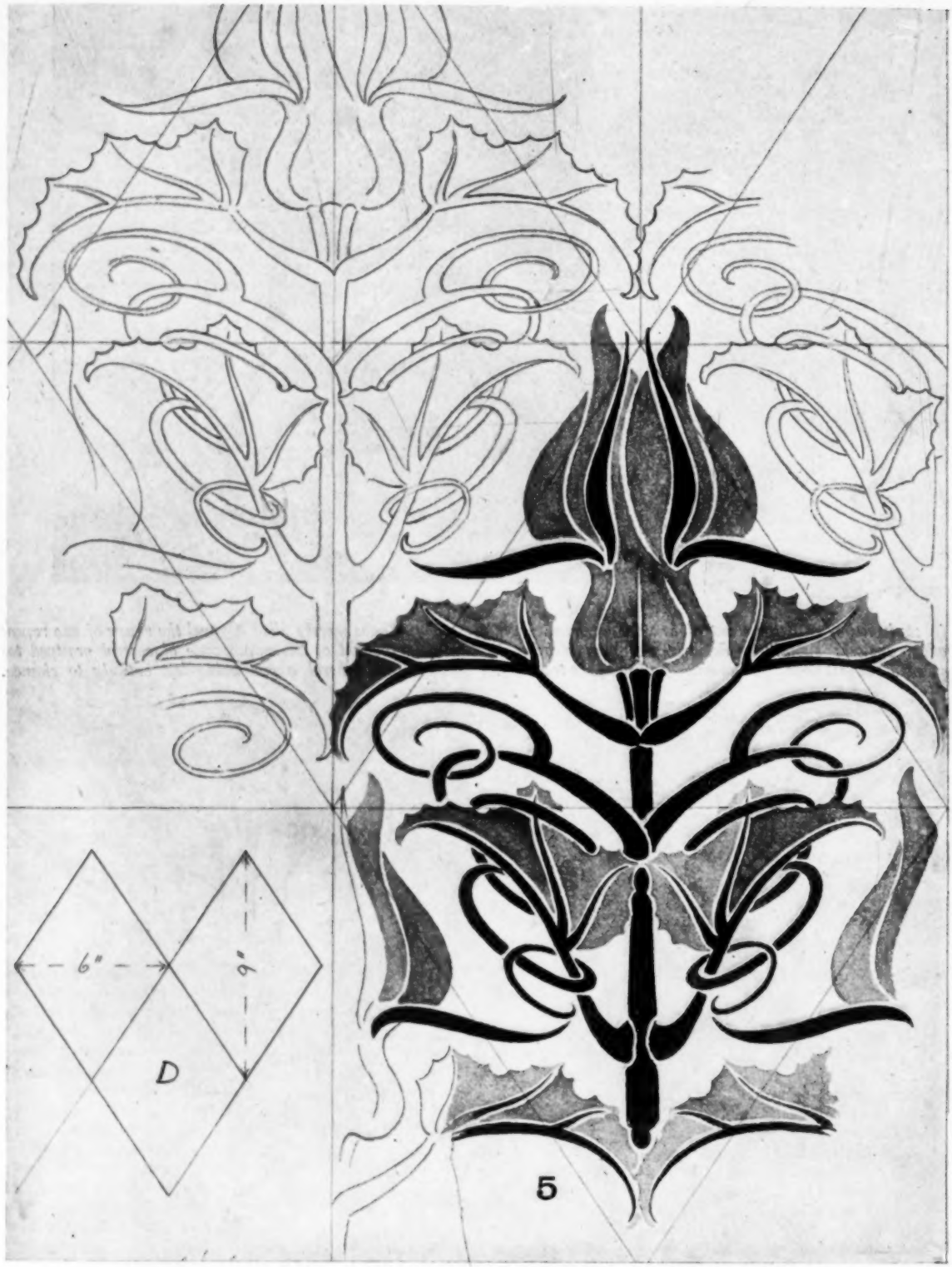
Considerably more than half the students have chosen Exercise III. This exercise as a whole has been very efficiently answered, a fact gratifying in itself, but taken



in conjunction with the want of knowledge shown in the other answers submitted, demonstrates very clearly, as pointed out last year, the one-sided nature of the teaching.

Many have merely filled a panel the shape of one repeat without thought of the appearance of several grouped together, this general aspect being left entirely to chance.

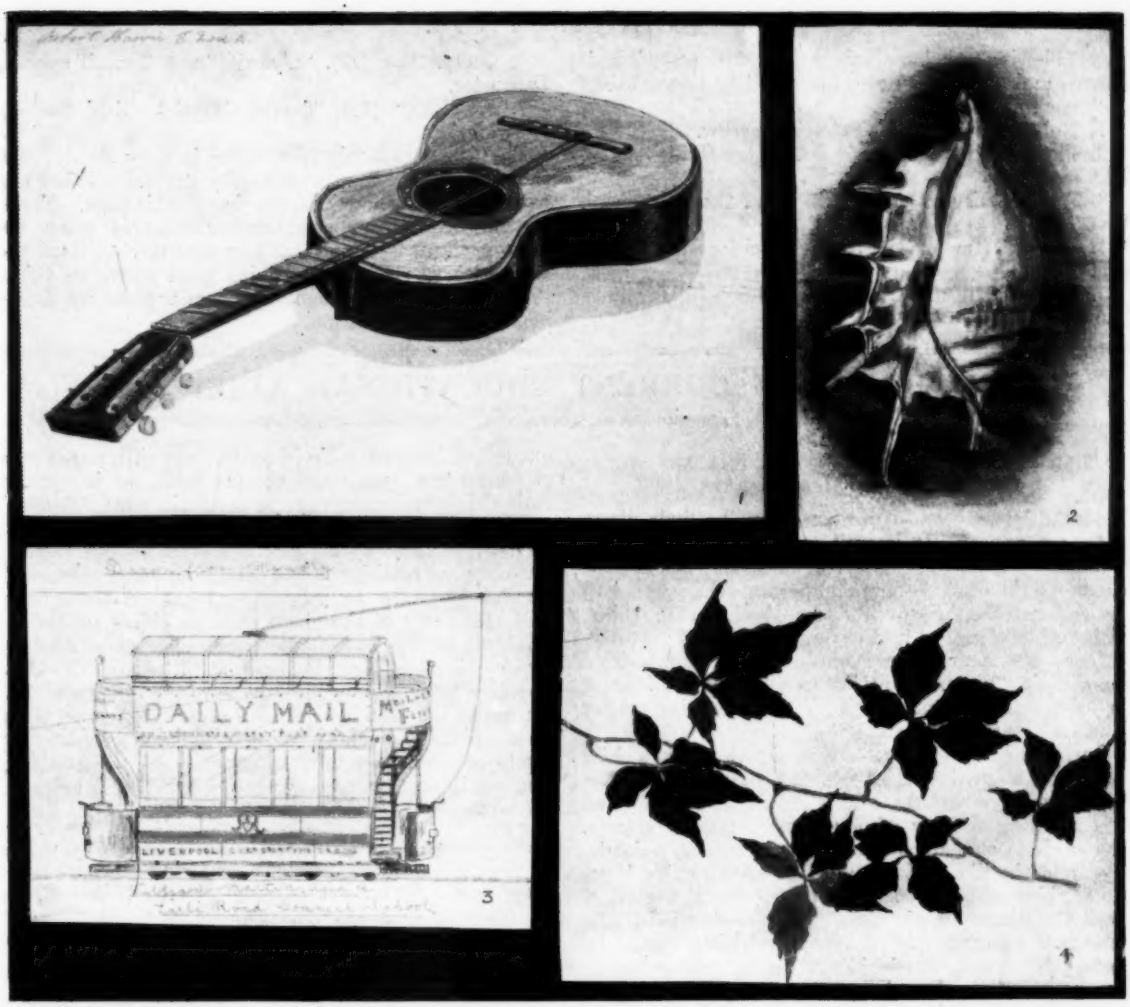




Some have even forced the start into a wedge shape so as to fit the lowest angle of the lozenges.

There is nothing in the question to suggest this treatment.

A great many seem to think that flowers have no necessary part in a floral design, and have either omitted them or substituted fruit. These have received discounts.



HONOURS PAGE.

HONOURS PAGE.

THE following scholars have gained "honours" this month, and a good box of colours will be forwarded to each one immediately.

1. Robert Harvey, High School, Glasgow.
2. Flora Jenkins (13), Barrhead Higher Grade School, Barrhead.
3. William Martin (12), Earle Road Council School, Liverpool.
4. Marjorie Hurton (15), Roan School for Girls, Greenwich.
5. Howard Millsum (13), Cathedral School, Birmingham.
6. George Fox (13), Sulyard Street Council School, Lancaster.
7. F. Hilder (13), Thorpe Hamlet Girls' School, Norwich.

The drawings lately have come in very slowly, and those given this month practically exhaust all that are worthy of the honour of appearing on this page. There are, however, an immense number of schools where we know good work is done that have sent no contributions. In justice to the scholars doing good work, we think the teachers should encourage them to send up drawings for this competition.

THOUGHTS FROM CURRENT EDUCATIONAL ADDRESSES.

[These should be read in conjunction with Mr. Ryle Smith's article on drawing.—ED. ART SECTION.]

CHILD STUDY IN RELATION TO ELEMENTARY ART EDUCATION. BY EARL BARNES.

UNDER two years of age there can be little direct art appeal. It is well to have the child surrounded by good expressions in form and colour, but the mother's dress is more important than the wall decorations. Motor development is the main thing. Elaboration of colour in playthings is wasted; strong, distinct effects are wanted in all sense impressions. Donatello's "Singing Boys," which adorns a crèche in one of our cities, is of value only as advertising matter to interest patrons.

During the cataloguing stage, from two to six, a child should do a great deal of drawing. He should draw figures on large surfaces, which should be so placed as to encourage activity of the central muscle masses. The subjects should be men, women, babies, animals, toys, and the like. He should be encouraged to leave the scribble stage for the few clear, strong lines that mark the diagrammatic period. Expression being the important thing at this period, all criticism should be made subordinate, and incidental enough, so as not to discourage effort or weaken zest. Suggestion and correction should follow the same lines as in other forms of language. Grammar must wait on growth. Of course there will be some attempts at copying objects, but the child had best represent something vital to himself. If he has made a house with blocks, or an outline of a farm with sticks, he will have organised the motor impulses corresponding with the visual impulses in him through doing, and he will have an image worked out in his mind. He will then be interested in translating the motor impulses of building into the motor impulses of drawing. Later on he will draw plans in order that he may build; now he will build in order that he may draw. The wise teacher will direct attention to the beautiful in line and colour and mass, and the forming of larger units in the mind will lead towards appreciation of landscape. The artistic appreciation will be gradually separating itself from the general mass of sensibility, and some of its elements will be shaping themselves. All art development in this period will be a by-product of general doing and thinking, as it must largely always be.

DRAWING IN SCHOOLS. BY B. C. HASTWELL.

I KNOW of no study of childhood more fascinating than the self-expressive activities which are carried out in our infants' schools. To judge of them with any degree of correctness, you must become again, as it were, a little child, and endeavour to ascertain what "*truths*" are being expressed to us. The crude lines may not, perhaps, conjure up at once a picture to our minds; but they are realities to the child who made them, and the teacher must be very careful not to destroy the individual way of the small child in giving us his *ex*pressions of his own *im*pressions. The generalisation by experience of Earl Barnes and the studies in childhood by Sully clearly indicate that the small child is concerned more with facts than appearances, and if we bother him too much by trying to make him see according to our own more lofty standpoint, we may be doing him an injury by presenting him with knowledge at the wrong time.

Clay Work. By Katherine Morris Lester. (*Manual Arts Press, Peoria, Illinois.* 5*s.*)

Of the educational value of clay modelling there is really no two opinions. No subject of manual work has come in for less adverse criticism. Miss Lester's book is valuable because of its suggestiveness. It deals not only with what may be called the orthodox school modelling, but traverses a wider field by showing illustrations (in many instances children's work) of free modelling of the figure—human and animal—story illustration, architectural details, tile work and pottery. The letterpress is clear and concise, and the volume, like all books issued by the Manual Arts Press, has a very good appearance.

Geographical Modelling. Harbutt's Plasticine Series.

Whatever may be the opinion regarding plasticine as a modelling medium, there can be no doubt whatever about its suitability for this purpose. Its readiness, texture, and durability all alike make it a most suitable material for geographical modelling. Mr. Harbutt is to be congratulated on the issue of this helpful booklet.

Door Making. The Woodworker Series. No. 8. (*Marshall and Co., Poppin's Court, E.C.*)

Another of the excellent manuals in this series, showing by illustration and description how doors of all kinds are made. A most useful manual for trade classes, and for continuation class woodwork.

Papers for Teachers of Infants.

MORAL TEACHING FOR INFANTS AND JUNIORS.

BY MABEL A. BROWN.

Scheme for March.

Central idea—obedience and politeness.

Divisions of Subject.

Week 1. Obedience to God. "Fear God, and keep His commandments."

Week 2. Obedience to parents and teachers. "Children, obey your parents in the Lord; for this is right," etc. (Eph. vi. 1.)

Week 3. Obedience to the laws—(*a*) of our land (study Romans xiii.); (*b*) of our town. "Submit yourselves to every ordinance of man for the Lord's sake." "Honour the king." (1 Peter ii. 13 and 17.)

Note.—In this connection simple lessons should be given to the juniors upon the making of laws, the Houses of Parliament, the growth of the people's power, etc. Laws and rules enforced in any particular district should be taught to the children. The terrible results of lawlessness should be illustrated by reference to history and to any suitable local events.

Week 4. Good manners—(*a*) at home, (*b*) at school, (*c*) in the street; especial politeness to people older or weaker than oneself. "Love as brethren, be pitiful, be courteous." (1 Peter iii. 8.)

Bible Stories.

Weeks 1 and 2. Story of the Israelites; their discontent and ingratitude; the making of the golden calf. Exodus, early chapters, and chap. xxxii.

Note.—It would be a good plan to take the story of the Israelites continuously right through the month if the children have not had it before.

Week 2. The boyhood of Samuel (1 Sam. i., ii., iii.). The boyhood of Isaac (Gen. xxii.). The boyhood of Jesus (Luke ii. 40–52).

Weeks 3 and 4. Story of the Roman occupation of Jerusalem. The teaching of Jesus about the tribute money (Luke xx. 19–26).

Other Stories.

Law of authority and obedience (*Parables from Nature*). Training and restraining (*Parables from Nature*). The law of the wood (*Parables from Nature*). Kicking (*Parables from Nature*). Story of Pandora (*Nature Myths and Stories*). Story of Persephone (*Nature Myths and Stories*). Story of Phaethon (*Nature Myths and Stories*). The story of King Alfred and his wise laws. The story of King Arthur and the knights of the Round Table. The story of Griselda (Chaucer). The story of the oriole's nest (*The Story Hour*).

Hymns.

"Hushed was the evening hymn" (*Ancient and Modern*). "Do no sinful action" (*Ancient and Modern*). "God sends His bright spring sun," by Eleanor Smith (*Songs for Little Children*). "The morning sun is shining bright," by Eleanor Smith (*Songs for Little Children*).

Texts and Mottoes.

In addition to those already given—Second Commandment, Fifth Commandment, the parable of the Sower (Matt. xiii. 1; 1 Peter iii. 7–13).

Recitations.

Juniors.—"Flower Chorus," "The Coming of the Flowers," "Daffodils" (*Poems for Junior Schools*, published by Horace Marshall, price 3d. Book I.).

Infants.—"The Baby Seed's Song," "The Brown Thrush," "Daffydowndilly" (*Poems for Junior Schools*, published by Horace Marshall, price 3d. Book I.).

Games.

"Good-Morning," "Good-Afternoon," "Spring," "Three Little Fish" (*Child's Song and Game Book*. By Keatley Moore).—"To the Great Brown House," "Easter Song," "All the Birds have Come Again" (*Songs for Little Children*. By Eleanor Smith).

Any other games that illustrate the obedience of the earth to natural laws may be taken.

Nature Study.

Section 1.—The existence of natural laws; day and night; the seasons; sun, moon, and stars in their relation to the earth.

Note.—If taken with infants, Section 1 should be made very simple.

Section 2. *Plant Life.*—The returning life of spring. Study especially (Juniors) the flowers and leaf buds of common trees—for example, oak, ash, elm, beech, lime, horse chestnut, willow, hazel, etc. Germination of seeds—wheat, peas, beans, cress, etc. The characteristics of early spring flowers, as shown in the daffodil family, etc. (Infants.) Germination of seeds—how a plant lives and grows; parts and functions of a plant. Spring flowers—primrose, violet, daffodil, anemones, etc. Trees in spring—fields in spring—the ploughman.

Section 3. *Animal Life.*—(Juniors.) The structure of a bird; the structure of a feather; birds and their work for man; the habits of birds. (Infants.) Birds in spring; nest building; feeding the young; bird enemies; bird visitors; birds we know. (Study those common in the locality of the school.)

Note.—The books of Mr. Kearton on bird life will be found very helpful for giving interesting and useful information in this connection.

Kindergarten Occupations.

Juniors.—(1) *Drawings* to illustrate the lessons on natural laws—for example, the seasons; day and night; sun, moon, and stars. (2) *Brush-work.*—Painting from nature (*a*) twigs of trees with flowers and developing buds; (*b*) stages of

growth in germinating seeds; (c) spring flowers. (3) *Clay Modelling.*—Tree twigs with buds; a daffodil with leaves. *Note.*—Both of these should be mounted on slabs. (4) *Drawing.*—(*a*) Freearm work: a bird, a bird's wing, a feather, branch with nest. (*b*) Freehand work: spring flowers.

Infants.—(1) *Brushwork.*—Painting from nature the various spring flowers studied, with their leaves. (2) *Clay Modelling.*—A bean, twigs of trees, a bird's nest. (3) *Drawing.*—(*a*) Freearm work: a plough, a harrow. (*b*) Any spring flowers studied. (4) *Paper-cutting.*—A picture made by the class to illustrate ploughing. The plough and ploughman, sower, rooks, trees, etc., should be cut out in white paper, and mounted on a brown background. A little coloured chalk will help to make the picture more effective.

A CURE FOR THE TEAZLES.

THE Junior Partner, who is four and a half—going on five—had a bad attack of the teazles, which is quite as serious as the measles, if not more so.

So the Senior Partner thought over the case, and thought and thought, just as the doctor does when you are ill, but he does not show it. Teazles is treated in so many different ways. And some of the treatments, such as the use of hard words, while they give the operator relief, drive the teazles in and make the patient worse. Latinized water is good for many things, as every doctor knows. If fresh and cool, it is excellent in the treatment of the whines. But you could not carry a lot of Latinized water around, and have it fresh for use when you feel the teazles coming on. The Junior Partner must have a remedy which he could take with him and use himself, so as to be always prepared for an attack.

"Partner," said the Senior Partner, "do you really and truly wish to be cured?"

"Yes, Daddy."

The Junior Partner is a great joker. He calls the Senior Partner "Daddy," and the General Manager "Mother."

"The cure which I will give you is a very old one, and comes from the East—from the greatest Doctor that the world has ever known. If you use it carefully it will cure any attack, however severe. Hold your hands in front of you—palm to palm and a little apart. Are you ready?"

"Yes, Daddy."

"Bring the tips of the little fingers together. Say—Little."

"*Little.*"

"Next finger-tips together. Say—Children."

"*Children.*"

"Middle finger. Say—Love."

"*Love.*"

"Next finger. Say—One."

"*One.*"

"Thumbs. Say—Another."

"*Another.*"

"I will call this cure "Naming the Fingers." When you feel an attack coming on, use it quickly, and keep on using it until you feel better. You may name the fingers to yourself if you wish. Now let us practise it."

—*Dr. John C. Schapps in "St. Nicholas."*

HOW THE OLD WOMAN CAME TO LIVE IN A SHOE.

BY LILY FRITH.

THE imps were the naughty people in Fairyland; if ever anything mischievous happened, you may be sure they had had a hand in it. There was only one person they feared—they didn't fear him *very* much—and that was the Fairy Giant, who was twenty times the size of any one else in their land. He was not really very big, but you see everybody else was so *very* small. The Giant said that the imps were not to mix with the other folk in Fairyland, their ways were too uncertain; you could never tell what they would do next. He gave them one of his own shoes to live in, so that he might always know where to find them at night. He pretended that he did this to keep the fairies safe; but I think it was just an excuse to get them to give him a new pair, and *this* was what the imps thought. They *thought* this, and what is much more important they *remembered* it; but imps can pretend as well as giants, and *they* pretended that they were neither thinking nor remembering anything about him. For a time they played all their pranks a little way from Fairyland, and the Giant thought that at last they were cured. *He* didn't know what was going on. The imps were always in their shoe at night while the other people were playing and dancing and holding all sorts of revels. They seemed to be very good and quiet, but they were *plotting*, and to do that well a large quantity of goodness and quietness is needed. They knew some of the Giant's friends, and decided to "prank" on them first, and on the Giant himself after. They said, "There's that little prig, Miss Muffet; we'll upset her to begin with." Now, Miss Muffet was very timid and shy. Every day she used to carry the curds and whey which she always had for dinner to the wood near her home, and there sit on a tree stump, made pretty with mosses and ferns. The imps found this out. They said, "*We'll* have curds and whey to-day," and then gave each other wicked winks. They caught the biggest spider in the wood, and offered to catch flies for his web all the afternoon if he would help them to frighten Miss Muffet. Of course he could not refuse a chance like that, so he agreed to do anything they wished. They got him to spin a long thread, and give them the end of it to hold. With this in their hands they climbed into the branches of the tree above Miss Muffet's little stool, and waited there until the time for her to come out. Just before she was expected they drew the spider up and down by the thread to be quite sure they could do it properly when she came. Shortly after, Miss Muffet appeared, sat down demurely on the tuffet as she always did, and proceeded to eat her dinner. "Grin" is rather a nasty word to use, I know, but you couldn't call the look on the faces of the imps just then anything else. They grinned, and let down their spider very gently by a thread, which, of course, Miss Muffet could not see; the only thing *she* saw was the spider, and that frightened her terribly. She jumped up. Over went her basin, *out* ran curds and whey over the ground, and *off* ran Miss Muffet shrieking back to her home. I believe that was the very last time she ate curds and whey in the wood; perhaps I had better say *tried* to eat, for she had only had about two spoonfuls when the imps dangled that spider in front of her. They themselves had a grand time. First, they caught lots of flies for the

spider; then they tasted the curds and whey, but didn't like them, so decided that the latter would make a lovely pool for swimming, and straightway danced and splashed and rolled in it to their hearts' content until nightfall, when they ran back to their shoe helter-skelter, and were to all appearances fast asleep when the Giant came to have a look at them.

As soon as he had gone they made their plot for the next day. At the far side of the wood were two tiny houses; in one lived Jack Sprat and his wife, and in the other lived Jack and Jill with their mother. Every day Jack and his sister used to be sent up the hill at the back for water, which they brought back in a pail. There was no water in those houses except what was fetched in this way, so these two little people had a busy time of it. The day after poor, prim Miss Muffet's adventure the imps were hiding near the houses. A few went into Jack Sprat's cupboard and hid behind the platter which was in it, while the rest got inside Jill's pail. How heavy that pail was that morning, and how perverse! As Jill grasped the handle the rim of the bucket retorted by banging the back of her hand. Then she turned it upside down under her arm: the little hooks scratched her, so she dropped it, and it rolled back to the bottom of the hill. How the imps enjoyed that little ride, and how they chuckled when Jill's mother came out to scold her for being so careless! The journey *up* the hill seemed to be all accidents—the imps were there, you see—but the journey *down* was much worse. Poor Jack and Jill remembered it for many a day. They filled their pail as usual; each grasped one side of the handle, also as usual; then the *un*usual part—the impish part—happened. Jack began to walk quickly—*we* can guess who made him do that. Then he fell over something. He thought it was a stone; *we* know that it wasn't a stone—there had never been one there before. Of course he pulled his end of the pail handle as he fell, and of course that jerked Jill's end of the handle, and brought her tumbling over after him. Jack had the worst of it; his head had got a big bang. He picked *himself* up and ran home howling, and left his sister to follow with the empty pail. Their mother had such trouble mending up that head—it looked rather like a broken window patched together when she had done; there were straps of brown paper all over it, and the vinegar smelt horrid. Jack had to lie in bed and keep very still, but Jill had nothing to do but look at the dreadful straps of paper on his head and smell the vinegar. I rather think she had the worst of it then, and all through those naughty imps.

What had the other party been doing in Jack Sprat's house? They were hiding behind that platter, and when Mrs. Sprat came to take it from the cupboard it behaved in the most extraordinary manner—rolled away from her to the other side of the cupboard, slipped on the shelf when she thought she had got it safe, and was not captured until she used her two hands to hold it. She placed it in the centre of the table, and put upon it the fat meat which she was so fond of and the lean meat which her husband liked so much. Jack came home; they sat down to dinner, but immediately stood up again to look at the meat, for somehow it had got mixed up, and you couldn't tell which was fat or which lean. Jack thought his wife was playing a trick on him by trying to make him eat some fat; she said the meat was quite right before *he* came, and that he must have mixed it up to make *her* eat lean. They really got very cross. Neither would have anything to eat; and for the very first time in their lives the platter was not left clean at dinner. Imps again, you see; they had been lurking under the edge all the time, and so brought this about. That night they were so merry telling each other their various adventures that the Giant poked his nose inside the shoe to find out what they had been doing. Two imps at once jumped on it and sat astride it as though they were on a horse; others swarmed over his hair, his eyelashes, his ears; some sat and swung their legs upon his bottom lip; and some hopped on his shoulder. They stuck so close he *had* to take them home with him, but he didn't enjoy their company at all. They plagued him so much that he begged them to let him go to bed. They agreed very quickly; and if the Giant had been wise, he would have kept awake to watch them. He didn't, however, and as soon as he was safe in bed the imps stole off with his shoes. They didn't want them themselves, so they gave them away to Goody Two-shoes, who was always glad of a new pair, and especially a fairy pair like these.

Now these fairy shoes had always kept the Giant good-tempered; without them his temper was *very* bad. Next morning, as soon as he saw they weren't there, he went off after the imps; but, of course, they were not to be seen anywhere. The Giant's temper got worse; he was in a *rage* by this time, and strode about upsetting everybody. He passed through the meadow, where Margery Daw and Johnny were having their see-saw, and tipped up the plank; called at Jack Horner's, and carried off the pie; looked in at Tom Tucker's, and stole the knife, so that the poor boy couldn't have his bread and butter; met the old woman who sometimes went up to the moon at night, and dragged her broomstick away from her; and altogether behaved so badly that he was *turned out* of Fairyland. Where he went I don't know; I can't think of anybody who would have him without shoes.

Having got rid of the Giant like this, the imps *turned good*. They started the see-saw again for Margery and Johnny; cut some nice bread and butter for Tom Tucker; made a new pie for Jack Horner; and persuaded the old woman who had lost her broomstick to come and live with them in the shoe.

It was a very happy family in that shoe; the old woman did all the work, and the imps did all the playing. She made the broth, while they played hide and seek in and out the lace-holes. At night they ate their broth, the old woman kissed them, and everybody went to bed to *sleep*, not to *plot*.

KINDERGARTEN PLAY.

RED RIDING HOOD.

BY FLORENCE H. ELLIS, WARLEY ROAD COUNCIL SCHOOL, HALIFAX.

THE teacher will first tell the children the story in as graphic a manner as possible. In choosing the characters for the first time the play is done, preference will be given to those having most initiative. Every child must be given something to do, if it be only to form part of the wall of "Granny's house," or to be one of the "trees in the wood."

The number of children in the class will, in a great measure, determine the arrangements of the game. Besides the leading characters, the other children can be employed as "trees;" they will enjoy choosing their

own "tree." Some will be oaks, others beeches, and so on. Again, a few can be "birds," while others may be squirrels.

As children love dressing up, this part of the play must not be neglected. Red Riding Hood will have the orthodox cape and hood; one can easily be made of Turkey-red twill. The mother will wear a white apron; granny must have a frilled cap, if it is only made of tissue paper; and the wolf will be terrible enough if he has a fur mat over his shoulder or a fur boa around his neck.

The first time the game is played it is advisable that the children use words of their own, so as to give expression to their ideas.

As these are old, well-known stories, no principle is violated by allowing the little ones to memorise the few rhymes; they help to co-ordinate the story, and a game like this is useful at the end of an afternoon, when the children are not fresh enough to be original, and yet are anxious to play. However tired they are for other things, they are never too tired for playing such stories as Red Riding Hood, The Sleeping Beauty, Cinderella, etc. The verses are only suggestive, for it is much better to try to get children to express their ideas in their own words.

With a class of only ten or twelve it would be wrong not to let the children invent the whole game for themselves, but with a class of thirty or forty children something must be done to keep every child interested and busy.

Characters.

1. Red Riding Hood.
2. The Mother.
3. The Wolf.
4. The Woodman.
5. Granny.
6. Trees—oak, sycamore, beech, elm, etc.
7. Birds—thrush, wren, robin.
8. Squirrels, rabbits.

After the chief characters have been chosen, the rest of the children will arrange themselves—some to form a house for mother, others for granny's house, and the rest for the wood and the animals.

The children representing birds will first pretend to fly, singing,—

Tune—"Cock-a-doodle-doo."

Birds. Little birds are we,
Singing merrily.
Red Riding Hood we see;
She loves thee and me.

Tune—"Where are you going to, my pretty maid?"

Mother.
Red Riding Hood, dear, I want you to go
With honey to granny, so don't yon be slow;
Don't gather the flowers nor speak to the birds.
[Repeat last line].

Red Riding Hood and her mother come out of the house as the latter says or sings the above words.

Red Riding Hood.
Yes, mother dear, I'd love to go;
I want to see dear granny so.
I'll lift the latch and walk straight in,
For you know before I've often been.

Red Riding Hood departs, carrying the basket, and humming gaily. As she goes she touches the trees, and calls to the birds, and loiters on her way. The birds all shake their heads, and sing,—

Birds. Riding Hood, oh fie,
You will make us cry.
What did mother say?
Hurry on your way.

The wolf comes up and whispers in her ear. She laughs, and gives him a flower, and he tells her where to find some nuts growing. They sit down, and she tells him her errand, and what she says to granny. Then the wolf rushes off, and Red Riding Hood looks for the nuts. The wolf gets to granny's house, and imitates Red Riding Hood's voice:—

Wolf. O granny dear, mother has sent me
With honey and cake for your tea.
Shall I open the latch and walk straight in,
I'll tread as quietly as can be?

The wolf gets into the house, seizes hold of granny, drags her out of the house, and pretends to eat her up. He then puts on her cap, and gets into bed. Red Riding Hood by this time has reached the house, and sings,—

Tune—"Ladybird."

Red Riding Hood.
Granny, dear granny, to you I've come,
And I've had such a lot of fun.
Granny, O granny, do let me come in;
I want to tell you all about him.
He talked to me, and I gave him flowers
While the birds were singing in the bowers.
But, granny dear, how funny you look!
Oh, please do unfasten this hook.

During the singing or saying of the above, Red Riding Hood has approached the bed, and then follows the dialogue.

Red Riding Hood. Granny, what big eyes you've got!
Wolf. All the better to see you with, my dear.
Red Riding Hood. Granny, what big ears you've got!
Wolf. All the better to hear with, my dear.
Red Riding Hood. Granny, what big teeth you've got!
Wolf. All the better to eat you up.

The wolf rises from the bed, and is attacking Red Riding Hood when the woodman rushes in, armed with a big stick, at the end of which is a cushion, fastened on firmly to prevent hurting, and belabours him till he is killed!

Red Riding Hood rushes home to her mother, and tells her all about her adventures. The birds during the time are singing,—

Birds. Riding Hood, how sad!
Why were you so bad?
No more can you play
In our happy way.

The woodman follows the little girl home, and when the mother hears how good and brave he was she shakes his hand, and says or sings,—

Tune—"Girls and boys, come out to play."

Mother.
Woodman, woodman, I do thank you.
Without my child what should I do?
Come indoors and have some cakes,
Some honey sweet, and figs and dates.

They go inside the house, sit around a real or an imaginary table, and pretend to eat, while the rest of the children join hands, and sing,—

Tune—"Girls and boys, etc."

All. Red Riding Hood no more will play.
If sent an errand, she'll not stay.
In future she'll be always good,
Our own dear little Red Riding Hood.

Words by W. BLAKE.

A LAUGHING SONG.

Music by F. SQUIRES, F.R.C.O.

mf
When the green woods laugh with the voice of joy, And the dim - pling stream runs
Allegretto con grazia.
ff marcato.
mf
Ped. * Ped. Ped. * simile.
laugh - ing by; When the air does laugh with our mer - ry wit, And the green hill laughs with the noise of it; When the
rall.
cres. rall. mf
mead - ows laugh with live - ly green, And the grass - hop-per laughs in the mer - ry scene; When Ma - ry and Su - san and
Animando.
Em - i - ly, With their sweet round mouths sing, "Ha, ha, he!" When the
Animando.
paint - ed birds laugh in the shade, Where our - ta - ble with cher - ries and nuts is spread, Come,

EDUCATIONAL GLEANINGS.

MEMORY TESTS.

BY T. G. TIBBEY, B.A.

THE question of memory power becomes one of fundamental importance in these days of crowded curricula, and teachers, having no time for experiments of their own to determine the best methods of utilising what often seem the very feeble memories of their pupils, have to fall back upon the results obtained by those who have given some attention to the matter. Such results are not always in accord, and often appear slight in comparison with the amount of work involved; but they are always worthy of consideration, for from them may, and often do, come many suggestions for practical application. Thus M. Katzaroff has published in the *Archives de Psychologie* for 1908 an account of some experiments undertaken to determine whether, in learning a given written or printed passage, re-reading the passage or trying to recall it without looking at it—which, as the Americans do, he terms "recitation"—is the more effective method of memorising. As is usual in memory tests, nonsense syllables provided the matter for memorising. As a result, he concludes—and he gives the figures upon which he bases his conclusion—that whether it be a question of tenacity of memory or of readiness and certainty of recall, recitation is of greater service than re-reading, providing that the series of syllables has first been read a sufficient number of times to ensure at least partial recall. The number of these preliminary re-readings will depend upon the memory power of the subject and the length of the passage. This being understood, M. Katzaroff believes that the best result is obtained when at least two recitations are attempted, and are then followed by two re-readings, and so on until perfect. As he points out, the mental and emotional state of the subject differs considerably between re-reading and reciting a passage, the mental attitude being more alert and the nervous strain usually greater in the latter, whilst parts imperfectly remembered will be noted for special attention at the next reading.

It will be noted that these experiments dealt only with senseless matter, and it is always a question how far results so obtained are valid for sensible matter. In this case it would seem that the use of sentences having some meaning in place of nonsense syllables would rather strengthen than vitiate the conclusion. Ebbinghaus, the pioneer of memory tests, who first developed the use of nonsense syllables for the purpose, once made some experiments to test the difference between learning senseless and sensible material. He learnt six stanzas of Byron's "Don Juan" in fifty-two repetitions; but for the number of nonsense syllables equal to the sensible syllables in one stanza alone he found eighty repetitions necessary—that is, about nine times as many for the senseless as for the sensible material. Another experiment with Schiller's translation of the *Æneid* gave a similar result. The essential factor in this better result is the number of associations formed between words which mean something, which is one of the things specially avoided in learning syllables without meaning; and since such associations become clearer and stronger where the matter is both well understood and is interesting to the learner, the importance in English work of choosing for learning by rote such pieces as are interesting to the pupils, and of seeing that the meaning of these is first clearly grasped, is emphasised.

Even the question as to whether in learning such pieces for repetition it is better to learn in sections and afterwards join together or to learn the piece entire has been matter for investigation, also in Germany. Miss Steffens, after various experiments, came to the conclusion that the stanzas of a poem were learnt better by the entire method than by the sectional, and that the greater the number of sections the less economy in learning was there. In learning parts at a time an unnecessary association tends to be formed between the end and the beginning of the same section, whilst there is often some difficulty in forming the necessary connection between the end of one section and the beginning of the next; further, the attention is more likely to wander. There is an important qualification, however, to be made—for this only holds where the difficulty throughout the task is practically uniform. Often in some piece chosen to be committed to memory one part presents extra difficulty, and to this special attention needs to be given. Also it was found that the entire method was better where retention for a long time was desired; but since this method makes a much greater demand on the attention, it can only be applied to pieces suitable in length to the age of the pupil, which again suggests, as is acknowledged, that for young children several short and self-contained pieces are preferable to one long one, and that a good criterion of suitable length is the power to grasp the meaning of the whole.

NEXT MONTH

The *Practical Teacher* will contain—

1. Further contributions on Medical Inspection.
2. Another suggestive article by H. E. ROBERTS, M.A., on the keeping of School Anniversaries.

MODERN SCIENCE NOTES.

BY J. G. McINTOSH, SECONDARY SCHOOL, GATESHEAD.

The Correlation of the Teaching of Physics and Mathematics.

PROFESSOR PERRY recently delivered an admirable address on the correlation of the teaching of mathematics and science. The address appeared at full length in the *School World* for December, and ought to be carefully read by every science teacher.

Perhaps the most important point underlying the address is the appeal to the physicist to make his subject the introduction to the higher mathematics:—

"In the higher school work we ask for a rapid advance to the calculus and the use of calculus methods in teaching kinetics and physics....After a boy begins kinetics he quickly has an idea of speed and of the fundamental notion of the calculus."

We thoroughly agree that in a well-organised school the mathematical results of the physics course should be emphasised in the mathematical course.

We have adopted the following plan, with the result that the mathematical and physical curriculum has become closely interwoven. The plan is suggestive, and we shall be glad to have the opinions of other teachers engaged in a like experiment.

First Year.—In connection with the course in weighing and measuring, the "significant figures" in the results are tested by reference to the instrument used. Contracted methods in arithmetic are taught concurrently. The pupil has thus practical experience in intelligent approximation.

Comparisons of quantities of like denomination in physics are used as the basis of ratio and proportion, and the mathematical statement that if $x \propto y$ then $x = y \times$ constant illustrated from practical experiment. The graphic representation of $y = ax$ is illustrated, and the pupil shown that the rate of increase of y with regard to x is the constant a. The differential notation is not introduced at this stage. Formulæ are framed as the result of practical quantitative experiments, and exercises set upon these in the mathematical lessons. The pupil thus becomes acquainted with the use of symbols, and to a large extent looks upon algebra as a kind of shorthand method of expressing general rules.

The dimensions of quantities are carefully examined, and in this connection we see no very great harm in the pupil arriving at the correct dimensions of a result by cancelling words thus:—

$$\frac{\text{Volume of cylinder}}{\text{height}} = \frac{38{\cdot}7 \text{ ccs.}}{9 \text{ cms.}} = \frac{4{\cdot}3}{\cancel{38{\cdot}7}(\cancel{\text{cms.}} \times \text{cms.} \times \text{cms.})}{\cancel{9}\ \cancel{\text{cms.}}}$$

$$= 4{\cdot}3 \text{ sq. cms.}$$

Second Year.—The pupil is encouraged to compute by means of logarithmic tables the experimental results obtained.

The complete form of the equation to the straight line graph $y = ax + b$ is derived from experimental graphic work and the physical meaning assigned to the constant b. There are numberless instances where empirical formula of the form $y = ax + b$ may be obtained from experiments in mechanics. The values of a and b are found by the method of simultaneous equations. The pupil thus gets a clearer idea of the simultaneous equation.

Opportunities for using and illustrating the trigonometrical ratios occur in experiments in light and in resolution of forces, etc.

The graph $pv =$ constant is obtained thus. Students are encouraged to try plotting v^2, $\sqrt{v}$, $\frac{1}{v}$, etc., until some one finds the linear form.

Third and Fourth Years.—The equation $y = ax^n$ is treated thus—$\log y = \log a + n \log x$. In the graphic record of experimental results the pupils find the empirical formulæ. The differential notation is introduced, and the student obtains clear ideas of speed, velocity, and acceleration as rates expressed by $\frac{as}{at}$, $\frac{av}{at}$, etc.

Considerable stress is laid upon the representation and use of vectors—for example, the pupil begins to understand that the triangle of forces is only one case of the vector triangle. The experimental foundation is thus laid for the further treatment of vectorial algebra.*

In the dynamical work in these years considerable use is made of the vibrating spring method of measuring time, originally applied to the trolley apparatus, we believe, by Mr. Fletcher, and extended considerably in the construction of apparatus by Messrs. Cussons of Manchester. This affords mathematical exercises in harmonic motion, the variation in the sine, etc.

The application of the mid-ordinate rule to the estimation of areas is reduced to the more scientific form $\int y dx$, and this is applied to those experimental cases which arise in the course.

In the theoretical lessons to the upper classes purely experimental demonstration is largely superseded by more mathematical physics, while many of the problems usually attacked in the mathematical classroom are clothed in physical language.

As a result it has been found that the pupils gain facility in interpreting mathematical results, and in applying their mathematics. The subject no longer becomes a text-book study, but a real living subject, to be used by them and applied to the solution of other problems which may arise.

The Teaching of Logarithms.

For some unassigned reason the teaching of logarithms is generally postponed in the ordinary school curriculum until the pupil has studied the theory of indices. Probably this is partly due to the fact that in the usual text-book the chapter on logarithms follows that on indices, and partly that in the syllabus of the Board of Education the use of logarithms appears as part of the trigonometrical syllabus of Stage II. From the point of view of giving the average pupil in the first or second year of the secondary school a practical and intelligent knowledge of logarithms either reason is equally stupid.

It is believed that the following method gives the young student a fairly intelligent grasp of the principles and rules upon which logarithmic computation is based. The method has been tried with children fresh from the upper standards of the primary school with fair success, and is particularly applicable to the type of artisan student who is beginning the study of what is known as "practical mathematics."

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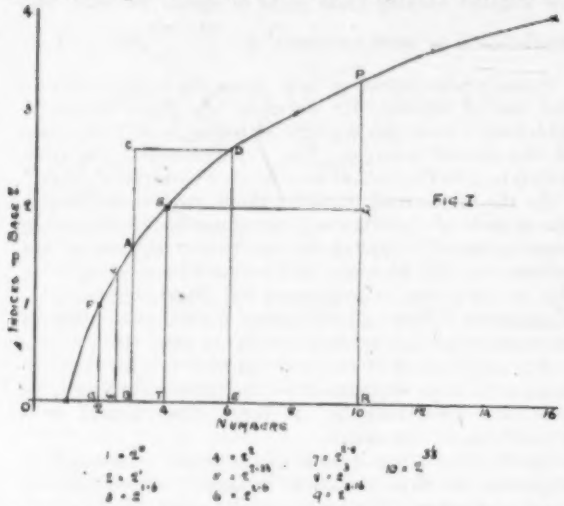
* See Heaviside's *Electromagnetic Theory*, vol. i., page 148.
"My own idea of a useful course (in mathematics) is to begin with arithmetic, and then, not Euclid, but algebra. Next, not Euclid, but practical geometry, solid as well as plane; not demonstrations, but to make acquaintance. Then, not Euclid, but elementary vectors, conjoined with algebra, and applied to geometry. Addition first, then the scalar product. When more advanced, bring in the vector product. Elementary calculus should go on simultaneously, and come into the vector algebraic geometry after a bit."

The only initial difficulty is the recognition of the fact that $a^0 = 1$. This may be got over in the following way. By reference to the ordinary system of notation we may express the value of each digit as a power of ten :—

	Thousands.	*Hundreds.*	*Tens.*	*Units.*
	1000	100	10	1
or	10^3	10^2	10^1	10^0

The pupil may easily be led to suggest from observation of the powers the fact that 1 might be written as



10^0. Using the thermometric scale as an analogy, he may easily be led to suggest that 0·1 may be written as 10^{-1}, 0·01 as 10^{-2}, etc. This may not be pure mathematics, but it is fair common sense.

Again writing out the numbers—

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16,
2^0, 2^1 2^2 2^3 2^4

the student may be led to see that these may be written as powers of 2, and from analogy that 1 would be 2^0, while $3 = 2^{1+\text{a decimal}}$, $12 = 2^{3+\text{a decimal}}$, etc. It remains to find a fairly easy method of evaluating the unknown decimals with a fair amount of accuracy. This step may be done graphically as follows (Fig. 1) :—

Along the horizontal axis the numbers 1 to 16 are plotted to a suitable scale, and the indices to the base 2 as ordinates. The known indices and numbers are plotted and the graph carefully drawn. The lengths of the ordinates for the intermediate numbers may then be obtained. The values given are those actually observed by a pupil.

It will be observed that $10 = 2^{3\frac{1}{3}}$. This index value is useful later on, and it would be wise on the teacher's part to so arrange the vertical scale beforehand as to cause this index to fall conveniently.. With this graph nearly all the rules for logarithmic computation may be educed by actual experiment.

(1) AB = index of 3 to base 2 or $\log_2 3$. (Fig. 1.)
FG = index of 2 to base 2 or $\log_2 2$.

Produce BA to C, making AC = FG, and find out the number which has BC or ED for its index, then

$$\log_2 3 + \log_2 2 = \log_2 6 = \log_2 (3 \times 2).$$

By continued application the general rule may be deduced

$$\log_2(ab) = \log_2 a + \log_2 b.$$

(2) Similarly RP = $\log_2 10$, VW = $\log_2 2{\cdot}5$. (Fig. 1.)

Subtract geometrically VW = PQ from RP. The result gives TS = $\log_2 4$.

Hence $\log_2 10 - \log_2 2{\cdot}5 = \log_2 4 = \log_2\left(\frac{10}{2{\cdot}5}\right)$

and by repeated experiment

$$\log_2\left(\frac{a}{b}\right) = \log_2 a - \log_2 b.$$

(3) In a similar way it may be shown that

$$\log_2 \sqrt{a} = \frac{\log_2 a}{2} \text{ (See Fig. 2)}$$

and $\log_2 a^2 = 2 \log a$; and so on.

There is, however, a much more important property which may be made clear by means of the graph.

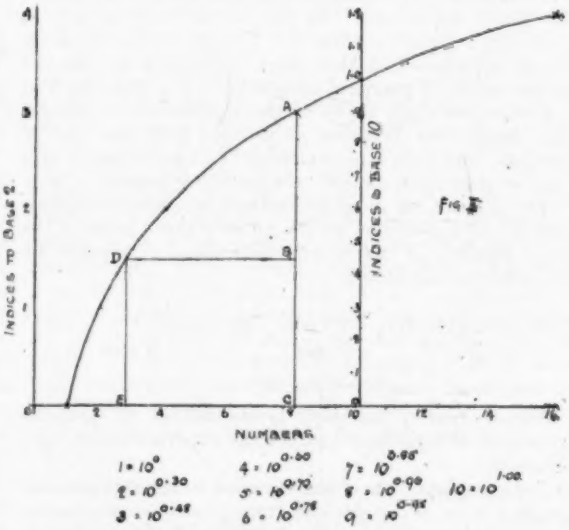
Since $10 = 10^1$, if RP (Fig. 1) be made equal to unity and subdivided, the logarithms of numbers to the base 10 may be calculated with fair accuracy to two decimal places. The results appended to Fig. 2 are again taken from a student's experiment.

Similarly since $8 = 8^1$ if CA in Fig. 2 be chosen as unity and subdivided, then the logarithms of the numbers 1 to 10 may be calculated to the base 8.

The student then realises the important point that logarithms are not confined to the base 10, but that it is possible to construct a table of logarithms to any number as base. Other points will occur to the teacher using this method—for example, the logarithms of all decimal fractions are negative quantities. The use of the negative characteristic can also be clearly shown graphically by this method.

The pupils should be now introduced to a copy of four figure logarithm tables and their calculations of logarithms to the base 10 compared with those given in the tables.

Working on this method it has been found easily possible to give students an intelligent appreciation of the use of logarithms without any deep mathematical knowledge. There is at least this to be said for the



method : the extraction of the square root of a number by logarithms is as well understood by the pupil as the theory underlying the ordinary arithmetical method. The fact, also, that the method is graphic appeals more to the pupils than the various arithmetical methods sometimes employed to find the logarithms to the base 10.

Our Query Column.

SOLUTIONS BY A. CLEMENT JONES, M.A., PH.D., SENIOR MATHEMATICAL MASTER, BRADFORD GRAMMAR SCHOOL.

RULES.

1. Each correspondent is restricted to *one* question.
2. Each query must be accompanied by the name and address of the correspondent, and the *coupon* which appears on the back wrapper of the current number of the Journal.
3. CORRESPONDENTS MUST IN ALL CASES STATE THE SOURCE FROM WHICH THEIR QUERY HAS BEEN OBTAINED.

The Editor reserves to himself the right to decline to answer any question which is, in his judgment, unsuited to the Magazine.

WAT.—A sum of £1,000 is lent to be repaid, with interest (compound) at 4 per cent., by annual instalments, beginning with £40 at the end of the first year and increasing 30 per cent. each year on the last preceding instalment. Find when the debt will be paid off.

Method 1—

(1) *End of*	(2) *Debt.*	(3) *Paid.*	(4) *Left unpaid.*
1st year	£1040	£40	£1000
2nd year	£1040	£52	£988
		15·6	39·52
3rd year	£1027·52	£67·6	£959·92
		20·28	38·3968
4th year	£998·3168	£87·88	£910·4368
		26·364	36·4174
5th year	£946·8542	£114·244	£832·6102
		34·2732	33·3044
6th year	£865·9146	£148·5172	£717·3974
		44·5551	28·6959
7th year	£746·0933	£193·0723	£553·0210
		57·9217	22·1208
8th year	£575·1418	£250·9940	£324·1478
		75·2982	12·9659
9th year	£337·1137	£326·2922	£10·8215

Thus at the end of nine years all the debt is paid with the exception of £10·82. This is clearly much less than the next regular instalment.

Explanation of Working.—The amount in the third column is multiplied by 1·3 at each stage. Thus the instalment is increased by 30 per cent.

The amount in the fourth column is the part of the debt left unpaid at the time when the yearly instalment is paid, and is therefore the difference of the second and third columns in the same row.

This amount is multiplied at each stage by 1·04—that is, 4 per cent. is added. The new total is placed in the first column as the amount of the debt at the end of the succeeding year. Four places of decimals are retained, which is unnecessary accuracy.

Method 2—

The amounts in pounds still owing at the end of successive years are as follows:—

1st year, $1000 \times 1{\cdot}04 - 40$.

2nd year, $1000 \times (1{\cdot}04)^2 - 40 \times (1{\cdot}04) - 40 \times (1{\cdot}3)$.

3rd year, $1000 \times (1{\cdot}04)^3 - 40 \times (1{\cdot}04)^2 - 40 \times (1{\cdot}04) \times (1{\cdot}3) - 40 \times (1{\cdot}3)^2$.

4th year, $1000 \times (1{\cdot}04)^4 - 40 \times (1{\cdot}04)^3 - 40 \times (1{\cdot}04)^2 (1{\cdot}3) - 40 \times (1{\cdot}04)(1{\cdot}3)^2 - 40 \times (1{\cdot}3)^3$,

and so on. Thus

$$n\text{th year, } 1000 \times (1{\cdot}04)^n - 40(1{\cdot}04)^{n-1} - 40 \times (1{\cdot}04)^{n-2} \times (1{\cdot}3) - 40 \times (1{\cdot}04)^{n-3} \times (1{\cdot}3)^2 - 40 \times (1{\cdot}3)^{n-1}$$

$$= 1000 \times (1{\cdot}04)^n - \frac{40\{(1{\cdot}3)^n - (1{\cdot}04)^n\}}{1{\cdot}3 - 1{\cdot}04}$$

$$= 1000 \times (1{\cdot}04)^n - \frac{40}{{\cdot}26}\left\{(1{\cdot}3)^n - (1{\cdot}04)^n\right\} = 0$$

by hypothesis, if n is the required number of years.

Hence $260 \times (1{\cdot}04)^n - 40 \times (1{\cdot}3)^n + 40 \times (1{\cdot}04)^n = 9$;

that is, $300 \times (1{\cdot}04)^n = 40\,(1{\cdot}3)^n$.

Hence $15 \times (1{\cdot}04)^n = 2 \times (1{\cdot}3)^n$.

Therefore $\log 15 + n \,.\, \log 1{\cdot}04 = \log 2 + n \,.\, \log 1{\cdot}3$,

or $1{\cdot}1761 + {\cdot}0170n = {\cdot}3010 + {\cdot}1139n$,

$${\cdot}0969n = {\cdot}8751,$$

and $n = 9{\cdot}03$ years.

This result agrees with that of the first method.

WRAGBY.—Lines OP, OQ, OR radiate from O, the centre of a given circle, and no one of the angles POQ, QOR, ROP exceeds an obtuse angle. Construct points in the rays, A, B, and C respectively, such that the triangle ABC may be circumscribed about the circle.

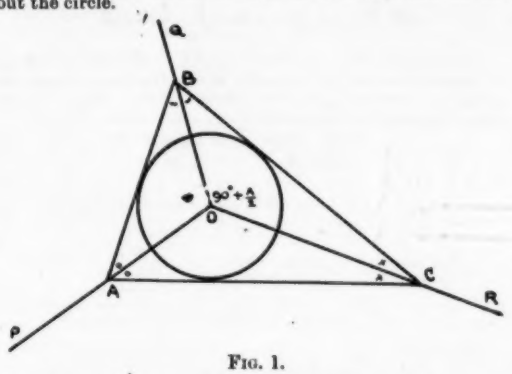


FIG. 1.

Analysis.—Suppose the triangle drawn as in Fig. 1, then OA, OB, OC bisect the angles of the triangle ABC. Hence the angle BOC is supplementary to $\frac{1}{2}(B + C)$, therefore the angle $BOC = 90 + \frac{1}{2}A$. Hence $\frac{1}{2}A$ and $90 - \frac{1}{2}A$ are known angles, and can be found by elementary constructions.

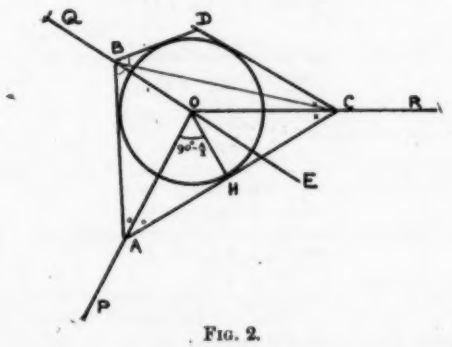


FIG. 2.

Construction and Proof.—In Fig. 2 make the angle POH equal to $(90 - \frac{1}{2}A)$, and at H draw a tangent to the circle meeting OP and OR in A and C. From A draw a tangent to the circle meeting OQ in B, and from B and C draw tangents to the circle, BD and CD.

Then shall BDC be a straight line, and therefore a tangent to the circle.

Since BD and BA are tangents, $\angle RBD = \angle OBA$,

and similarly $\angle OCD = \angle OCA$;

and as the angle OHA is right, the angle OAC is $\frac{1}{2}$A, where $\angle$ BRC is $(90 + \frac{1}{2}A)$.

Hence $\angle BOC = \angle OCH + \angle OKC = \angle OCA + \angle CAB + \angle OBA$;

that is, $90 + \frac{1}{2}A = \angle OCD + \angle OBD + \angle A$,

or $\angle OCD + \angle OBD = 90 - \frac{1}{2}A$.

But $\angle COE = 90 - \frac{1}{2}A$,

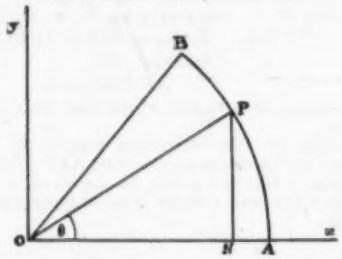
hence $\angle COE = \angle OCD + \angle OBD$,

also $= \angle OCB + \angle OBC$.

Hence it is evident that BDC must be a straight line.

GANYMEDE.—Find the centroid of a circular arc AB, of angle AOB = a, whose density varies as the length of the arc measured from A.

Take the radius OA and a perpendicular to it through O as co-ordinate axes of x and y. Let P be any point on the arc, draw PN perpendicular to OA, and call $\angle$ POA = θ.



An element of arc at P is of length $r \cdot d\theta$, and its density is proportional to AP—that is, to $r\theta$; the mass of the element is therefore proportional to $r^2\theta d\theta$. Hence by the usual formulæ for the centroid

$$\bar{x} = \frac{\Sigma ON \cdot r^2\theta d\theta}{\Sigma r^2\theta d\theta} = \frac{r\Sigma\theta\cos\theta d\theta}{\Sigma\theta d\theta}$$

$$= \frac{r\int_0^a \theta\cos\theta d\theta}{\int_0^a \theta d\theta} = \frac{r\Big[\theta\sin\theta + \cos\theta\Big]_0^a}{\Big[\frac{\theta^2}{2}\Big]_0^a}$$

$$= \frac{2r}{a^2}\left\{a\sin a + \cos a - 1\right\}.$$

Similarly

$$\bar{y} = \frac{r\int_0^a \theta\sin\theta d\theta}{\int_0^a \theta d\theta} = \frac{r\Big[\sin\theta - \theta\cos\theta\Big]_0^a}{\Big[\frac{\theta^2}{2}\Big]_0^a}$$

$$= \frac{2r}{a^2}\Big[\sin a - a\cos a\Big].$$

STUDENT.—Show that the modulus of tan $(x + iy)$ is

$$\left(\frac{\sin^2 x + \sinh^2 y}{\cos^2 x + \cosh^2 y}\right)^{\frac{1}{2}},$$

and the argument is $\tan^{-1}\left(\frac{\sinh y}{\sin x}\right)$.

Let $\tan(x + iy) = re^{i\theta} = \alpha + i\beta$, then r is the modulus and θ the argument. We have at once

$$r\cos\theta + ir\sin\theta = \alpha + i\beta.$$

And since the quantities involved are supposed real,

$$r\cos\theta = \alpha,\ r\sin\theta = \beta,$$

consequently $r^2 = \alpha^2 + \beta^2$,

and $\theta = \tan^{-1}\left(\frac{\beta}{\alpha}\right)$.

Now $\sin iy = i\sinh y$,

$\cos iy = \cosh y$,

and $\cosh^2 y - \sinh^2 y = 1$,

$\cosh^2 y + \sinh^2 y = \cosh 2y$.

We have $\sin(x + iy) = (\alpha + i\beta)\cos(x + iy)$,

hence $\sin x\cosh y + i\cos x\sinh y$

$= (\alpha + i\beta)(\cos x\cosh y - i\sin x\sinh y)$

$= (\alpha\cos x\cosh y + \beta\sin x\sinh y)$

$+ i(\beta\cos x\cosh y - \alpha\sin x\sinh y)$.

Equating real and imaginary parts,

$\alpha\sin x\sinh y - \beta\cos x\cosh y + \cos x\sinh y = 0$.

$\alpha\cos x\cosh y + \beta\sin x\sinh y - \sin x\cosh y = 0$.

Cross multiplying for α and β,

$$\frac{\alpha}{\sin x\cos x(\cosh^2 y - \sinh^2 y)} = \frac{\beta}{\sinh y\cosh y(\cos^2 x + \sin^2 x)}$$

$$= \frac{1}{\sin^2 x\sinh^2 y + \cos^2 x\cosh^2 y}.$$

Hence

$$\frac{\alpha}{\sin 2x} = \frac{\beta}{\sinh 2y} = \frac{1}{2\sin^2 x\sinh^2 y + 2\cos^2 x\cosh^2 y}$$

$$= \frac{1}{(1 - \cos 2x)\sinh^2 y + (1 + \cos 2x)\cosh^2 y}$$

$$= \frac{1}{\cosh 2y + \cos 2x}.$$

This gives us the argument

$$\theta = \tan^{-1}\left(\frac{\beta}{\alpha}\right) = \tan^{-1}\left(\frac{\sinh 2y}{\sin 2x}\right),$$

and the modulus

$$r = (\alpha^2 + \beta^2)^{\frac{1}{2}} = \frac{\{\sin^2 2x + \sinh^2 2y\}^{\frac{1}{2}}}{\{\cosh 2y + \cos 2x\}}.$$

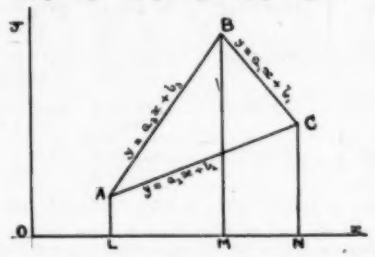
The answer here found does not agree with that sent by "Student." The question occurs in several text-books, and the answers there given agree with the above solution.

BOSWORTH.—By means of the integral $\int y dx$ taken round the contour of the triangle formed by the intersecting lines

$$y = a_1x + b_1;\ y = a_2x + b_2;\ y = a_3x + b_3.$$

Show that the area they enclose is

$$\frac{(b_1 - b_3)^2}{2(a_1 - a_3)} + \frac{(b_2 - b_1)^2}{2(a_2 - a_1)} + \frac{(b_3 - b_2)^2}{2(a_3 - a_2)}.$$



Let AB be $y = a_3x + b_3$, BC be $y = a_1x + b_1$, CA be $y = a_2x + b_2$.

The integral $\int y dx$ taken along AB gives the area of the figure ALMB, along BC gives the area BCNM, and along CA the area CNLA. The latter two are of different sign to the first, and hence the total is the area ABC.

Now the x-coördinates of the points A, B, C are respectively

$$\frac{b_2 - b_3}{a_3 - a_2},\ \frac{b_1 - b_3}{a_3 - a_1},\ \frac{b_2 - b_1}{a_1 - a_2}.$$

Call these x_1, x_2, x_3 respectively.

Then the area required

$$= \int_{x_2}^{x_1}(a_3x + b_3)dx + \int_{x_3}^{x_2}(a_1x + b_1)dx + \int_{x_1}^{x_3}(a_2x + b_2)dx$$

$$= \left[a_3\frac{x^2}{2} + b_3x\right]_{x_2}^{x_1} + \left[a_1\frac{x^2}{2} + b_1x\right]_{x_3}^{x_2} + \left[a_2\frac{x^2}{2} + b_2x\right]_{x_1}^{x_3}$$

$$= \frac{a_3}{2}(x_1^2 - x_2^2) + \frac{a_1}{2}(x_2^2 - x_3^2) + \frac{a_2}{2}(x_3^2 - x_1^2)$$

$$+ b_3(x_1 - x_2) + b_1(x_2 - x_3) + b_2(x_3 - x_1)$$

$$= \frac{x_1^2}{2}(a_3 - a_2) + \frac{x_2^2}{2}(a_1 - a_3) + \frac{x_3^2}{2}(a_2 - a_1)$$

$$+ x_1(b_3 - b_2) + x_2(b_1 - b_3) + x_3(b_2 - b_1)$$

$$= -\frac{(b_3 - b_2)^2}{2(a_3 - a_2)} - \frac{(b_1 - b_3)^2}{2(a_3 - a_1)} - \frac{(b_2 - b_1)^2}{2(a_2 - a_1)}$$

$$+ \frac{(b_3 - b_2)^2}{a_3 - a_2} + \frac{(b_3 - b_2)^2}{a_3 - a_1} + \frac{(b_2 - b_1)^2}{a_1 - a_2}$$

$$= \frac{(b_3 - b_2)^2}{2(a_3 - a_2)} + \frac{(b_1 - b_3)^2}{2(a_3 - a_1)} + \frac{(b_2 - b_1)^2}{2(a_1 - a_2)}.$$

MATHS.—If $x = r\cos\theta$ and $y = r\sin\theta$, and x and y are functions of the independent variable t, show that

$$x\frac{dy}{dt} - y\frac{dx}{dt} = r^2\frac{d\theta}{dt};$$

also express $\frac{d^2x}{dt^2}$, $\frac{d^2y}{dt^2}$ in terms of r, θ and their differential coefficients with respect to t, and find the value of

$$\frac{d^2y}{dt^2}\cdot\cos\theta - \frac{d^2x}{dt^2}\cdot\sin\theta.$$

If x, y be the co-ordinates of a moving point at the time t, what is the interpretation of the results obtained above?

(Stage VI., '04.)

Differentiate the equations

$$x = r\cos\theta,\ y = r\sin\theta,$$

then

$$\frac{dx}{dt} = \cos\theta\cdot\frac{dr}{dt} - r\sin\theta\cdot\frac{d\theta}{dt}. \quad . \quad . \quad . \quad . \quad . \quad . \quad \text{(i)}$$

$$\frac{dy}{dt} = \sin\theta\cdot\frac{dr}{dt} + r\cos\theta\cdot\frac{d\theta}{dt}. \quad . \quad . \quad . \quad . \quad . \quad \text{(ii)}$$

Hence

$$x\frac{dy}{dt} - y\frac{dx}{dt} = r\cos\theta\left(\sin\theta\frac{dr}{dt} + r\cos\theta\frac{d\theta}{dt}\right) - r\sin\theta\left(\cos\theta\cdot\frac{dr}{dt} - r\sin\theta\cdot\frac{d\theta}{dt}\right)$$

$$= r^2(\cos^2\theta + \sin^2\theta)\frac{d\theta}{dt} = r^2\frac{d\theta}{dt}.$$

This result can be obtained more readily by differentiating the equation

$$\frac{y}{x} = \tan\theta.$$

Thus

$$\frac{x\frac{dy}{dt} - y\frac{dx}{dt}}{x^2} = \sec^2\theta\cdot\frac{d\theta}{dt};$$

that is,

$$x\frac{dy}{dt} - y\frac{dx}{dt} = x^2\sec^2\theta\cdot\frac{d\theta}{dt} = r^2\frac{d\theta}{dt}.$$

Now x denotes the distance the particle has gone in the direction of the x-axis from some given position in the time t, hence $\frac{dx}{dt}$ (the rate of change of x) is the resolved part of the velocity of the particle in the direction of the x-axis. So $\frac{dy}{dt}$ is the resolved part of the velocity of the particle in the direction of the y-axis. The elementary definition of the velocity of a particle in a given time (namely, the limit of the ratio of the distance moved in this direction to the time occupied, when that time is very small) is the same as the definition of $\frac{ds}{dt}$.

The resultant velocity of the particle at the time t is the resultant of the two components

$$\frac{dx}{dt},\ \frac{dy}{dt};\ \text{namely, } \left\{\left(\frac{dx}{dt}\right)^2 + \left(\frac{dy}{dt}\right)^2\right\}^{\frac{1}{2}} \text{ or } \frac{ds}{dt},$$

where s is the distance the particle has moved from the given position in the time t measured along its path. The direction the resultant velocity makes with the x-axis is

$$\tan^{-1}\left(\frac{dy}{dt}\div\frac{dx}{dt}\right);\ \text{that is, } \tan^{-1}\left(\frac{dy}{dx}\right),$$

which is identical with the direction of the tangent to the path of the particle at the observed position.

If P be the position of the particle, O the origin of co-ordinates, then $\angle POx$ is θ and the distance OP is r. The resultant velocity of the particle can be resolved into two components, one along OP and one perpendicular to OP, called the radial and transversal velocities. The former component is the rate of increase of OP at the time—namely, $\frac{dr}{dt}$, the latter is $r\frac{d\theta}{dt}$. Here $\frac{d\theta}{dt}$ is the rate of increase of the angle POx at the time, and is therefore the measure of the angular velocity of the particle about O, the transversal velocity being as above, $r \times$ angular velocity.

If the mass of the particle be m, the moment of the momentum of the body about the origin at any time t is

$$\left(mx\frac{dy}{dt} - m\cdot y\frac{dx}{dt}\right), \text{ and } m\cdot r\cdot\frac{rd\theta}{dt} \text{ or } mr^2\frac{d\theta}{dt}$$

is the angular momentum about O. Thus the two sides of the equation are simply the expressions, in Cartesian and Polar co-ordinates respectively, for the angular momentum of a particle of unit mass.

In the same way the acceleration of the particle at any time can be resolved into two components—

(a) Parallel to the co-ordinate axes, or

(b) Along and perpendicular to the radius OP—that is, the radial and transversal acceleration.

The directions in (a) are *fixed*, and the components are therefore simply the rates of change of $\frac{dx}{dt}$, $\frac{dy}{dt}$ respectively—that is, $\frac{d^2x}{dt^2}$, $\frac{d^2y}{dt^2}$.

The directions in (b) are not fixed. Take a point P′ on the path very near to P, so that $POP' = d\theta$, and let u, v stand for the radial and transversal velocities $\frac{dr}{dt}$, $r\frac{d\theta}{dt}$. Then the rate of change of the velocity in the direction OP, since the radial and transversal velocities at P′ are $u + du$, $v + dv$,

$$= \text{limit of } \frac{(u + du)\cos d\theta - (v + dv)\sin d\theta - u}{dt}$$

$$= \frac{du}{dt} - v\frac{d\theta}{dt} = \frac{d^2r}{dt^2} - r\left(\frac{d\theta}{dt}\right)^2,$$

and perpendicular to OP

$$= \text{limit of } \frac{(u + du)\sin d\theta + (v + dv)\cos d\theta - v}{dt}$$

$$= \frac{dv}{dt} + u\frac{d\theta}{dt} = r\frac{d^2\theta}{dt^2} + 2\frac{dr}{dt}\cdot\frac{d\theta}{dt}.$$

The two sets of components (a) and (b) are equivalent, hence if the components (a) be resolved along the radius OP, the sum of their resolved parts will be equal to

$$\left(\frac{d^2r}{dt^2} - r\left(\frac{d\theta}{dt}\right)\right),$$

and similarly the sum of their resolved parts perpendicular to OP will be equal to

$$\left(r\frac{d^2\theta}{dt^2} + 2\frac{dr}{dt}\cdot\frac{d\theta}{dt}\right).$$

Hence

$$\frac{d^2y}{dt^2}\cdot\sin\theta + \frac{d^2x}{dt^2}\cdot\cos\theta = \frac{d^2r}{dt^2} - r\left(\frac{d\theta}{dt}\right)^2,$$

and

$$\frac{d^2y}{dt^2}\cdot\cos\theta - \frac{d^2x}{dt^2}\cdot\sin\theta = r\frac{d^2\theta}{dt^2} + \frac{dr}{dt}\cdot\frac{d\theta}{dt},$$

which interprets the latter half of the question.

Reverting to equations (i) and (ii), differentiate and

$$\frac{d^2x}{dt^2} = \cos\theta\cdot\frac{d^2r}{dt^2} - \sin\theta\cdot\frac{d\theta}{dt}\cdot\frac{dr}{dt} - \sin\theta\cdot\frac{dr}{dt}\cdot\frac{d\theta}{dt} - r\cos\theta\left(\frac{d\theta}{dt}\right)^2 - r\sin\theta\cdot\frac{d^2\theta}{dt^2},$$

$$\frac{d^2y}{dt^2} = \sin\theta\cdot\frac{d^2r}{dt^2} + \cos\theta\cdot\frac{d\theta}{dt}\cdot\frac{dr}{dt} + \cos\theta\cdot\frac{dr}{dt}\cdot\frac{d\theta}{dt} - r\sin\theta\left(\frac{d\theta}{dt}\right)^2 + r\cos\theta\cdot\frac{d^2\theta}{dt^2}.$$

Hence

$$\frac{d^2y}{dt^2}\cdot\cos\theta - \frac{d^2x}{dt^2}\sin\theta = 2\frac{d\theta}{dt}\cdot\frac{dr}{dt} + r\frac{d^2\theta}{dt^2}.$$

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THE NEW SCOTTISH EDUCATION ACT.

SOME OF ITS MORE IMPORTANT EFFECTS.

BY ROBERT DICKSON, M.A.

AFTER several abortive attempts on the part of successive Governments to place on the Statute Book of the country a new Scottish Education Act, the present Government has with some difficulty succeeded. Even in Scotland education has maintained its well-known reputation of being one of the most thorny and complex problems. The Education (Scotland) Act came into force on January 1, and it may not be out of place here to indicate some of its more important results.

Many educationists could have wished, for various reasons, that the question of extended School Board areas had been resolutely and vigorously handled. By this means it would have been possible to co-ordinate more effectively and more efficiently primary and secondary education, and at the same time enable a more equitable distribution of the increasing local cost of education to be made. The extension of areas would also have prevented the continuation of unseemly squabbles between adjacent educational authorities. Clause 22, by granting power to adjacent School Board districts to unite, may do something to remedy this last evil, and it will be interesting and instructive to observe how many educational authorities take advantage of this power of combination. The way in which present School Boards undertake their new and increased responsibilities may help to postpone the acceptance of the principles of extended areas, but it cannot prevent the ultimate adoption of this much desired reform.

By the Act extended, and in some instances additional, powers have been conferred on School Boards. They can now defray out of the school fund any expenditure necessary for the provision of accommodation, appa-atus, equipment, and service for the supply of meals to school pupils. No expense, however, can be incurred in the purchase of food, except where parents are unable by reason of poverty or ill-health to supply sufficient and proper food for their children. Where school dinners are provided, therefore, the cost of the food must be met by voluntary agencies or paid for by the pupils. Under Clause 6 it is made a specific offence to send a child to school in a filthy or verminous state, or unable by reason of lack of food or clothing to take advantage of the education given. Wilful neglect of children may be punished under the Prevention of Cruelty to Children Act, 1904, with a penalty of £100 for a serious case or two years' imprisonment, and if a minor charge the penalty is £25 or six months.

School Boards are given power to establish Juvenile Labour Bureaux for collecting and distributing information as to employments open to children on leaving school. The after-school age problem is undoubtedly one of vital importance, and the establishment of such bureaux may do much to mitigate the evils caused by boys and girls entering prospectless employments. Already the Edinburgh School Board has adopted a scheme for the establishing and working of such an Information Bureau, and other large School Boards will probably follow suit. Free school books, writing materials, and stationery may now be provided to the pupils in attendance at any or all of the state-aided schools within the district of the School Board. Voluntary schools may accordingly be supplied with free books.

School Boards may, and where required by the Department shall, provide for the medical examination and inspection of school children. Many educational authorities have already made a beginning in this direction. In the case of others the cost has been a deterrent factor. By Section 17, Sub-section 6, School Boards can receive out of the district education fund a sum equal to one-half of the cost incurred by them in making this provision. Physically or mentally defective children are required to attend school up to the age of sixteen.

The compulsory period of attendance at school is between five and fourteen years of age. School Boards have the power to fix prescribed dates for commencing and terminating school attendance. In all likelihood the dates chosen will be those which are at present fixed in connection with the qualifying examinations —namely, August 1, January 1, and April 1. This will mean that pupils who reach five years of age between January 1 and April 1 must enter school on April 1; those reaching that age between April 1 and August 1 must enter on the latter date; and those between August 1 and January 1 on January 1. Similarly with those who attain the age of fourteen. They will not as at present, and to the dislocation of school arrangements, be able to leave the school at fourteen years of age. They can only leave at these fixed periods—that is, those whose birthdays are between January 1 and April 1 on April 1, those between April 1 and August 1 on August 1, and those between August 1 and January 1 on January 1. We have taken these dates as examples. School Boards can fix any two or more dates, but they must give notice of the dates by advertisement or otherwise.

Pupils who remove from one school to another are required to furnish themselves with certificates of attendance and progress from the school last attended. This will help to lessen unnecessary migration of pupils. Exemption certificates are now to be granted to pupils on condition that they attend school—day or continuation—between the ages of fourteen and sixteen. Frequent complaints have been made by the Scotch Education Department that these certificates have been too freely given by School Boards. Parents will probably, unless in very necessitous circumstances, think twice before they apply for certificates which carry with them the condition of two additional years' compulsory attendance.

Compulsion is laid upon School Boards to provide instruction in continuation classes, particularly in those subjects which refer to the crafts and industries of the district; but there is no compulsion on pupils to attend, unless the School Board makes by-laws to that effect. In this matter School Boards will act with caution, as there is a feeling in many quarters that public opinion is not yet ripe for compulsion. The approach of the School Board elections gives splendid opportunity for gauging the local public opinion, with the result in all likelihood that several of the aspiring School Board members will at the forthcoming elections undergo pretty severe heckling on the question.

The financial proposals of the Act are by far the most important part of it. Clause 15 pools and collects the finance, which is distributed in Clauses 16 and 17. The sum "pooled" amounts approximately to £500,000, made up as follows:—Under Sub-section 1, about £40,000; under Sub-section 2 the whole of the residue grant, about £60,000, hitherto partly distributed in relief of rates; under Sub-section 3 the fixed grant from probate,

about £60,000; under Sub-section 4 the secondary education grant, about £45,000; under Sub-section 5 the agricultural rates grant, about £38,000 or £40,000; and under Sub-section 6 the general aid grant, at least £250,000. The method of distribution takes into account the three factors—the population, the valuation, and the normal cost of providing the services. The first charges on the fund are the inspection and examination of secondary and intermediate schools, assistance to the universities, payments to central institutions, payment to provincial committees for the training of teachers and grants in aid of teachers' pensions.

To teachers the Act brings a new pension scheme on a money returnable basis, though, because of the details still requiring adjustment, it will probably not come into operation for at least a year. They have also been afforded greater security of tenure by being allowed an appeal to the Scotch Education Department in case of dismissal.

Every educational advance calls for increased local expenditure, and it will be found that many of the additional powers given to School Boards by the Act will involve greater outlay. Many School Boards have already voiced the dissatisfaction of the ratepayers on account of the increasing local burden. But it has yet to be determined what should be the proportion of the Imperial contribution to the local contribution. Doubtless the increased grants will do something to meet the increased expenditure.

OUR COOKERY COLUMN.

BY ROSAMOND CANDY, FIRST-CLASS DIPLOMÉE, NORTHERN COUNTIES SCHOOL OF COOKERY.

SIMPLE MENUS.

SUNDAY: *Breakfast.*—Brawn,* boiled eggs, toast and marmalade. *Dinner.*—Roast beef, Yorkshire pudding, horse-radish sauce, baked potatoes, boiled greens, apple amber,* and cheese in cases,* fruit. *Supper.*—Cold boiled Bath chop (pig's cheek), cornflour mould and raspberry jam.

MONDAY: *Breakfast.*—Bacon and eggs, toasted muffin and brown bread and butter, marmalade and jam. *Dinner.*—Hot-pot,* Brussels sprouts, cake with stewed figs,* cheese and biscuits. *Supper.*—Toad-in-the-hole,* Swiss roll.

TUESDAY: *Breakfast.*—Bread and milk, calf's liver and bacon, rolls and butter and marmalade, fruit. *Dinner.*—Ox-tail soup, beef-steak and kidney pie, steamed potatoes, tapicca pudding and stewed prunes. *Supper.*—Welsh rarebit, lemon cheese-cakes.

WEDNESDAY: *Breakfast.*—Bread and milk, kippers, buttered eggs, rolls and butter, fruit. *Dinner.*—Lentil soup, steamed filleted plaice* and sauce, croquettes of cold meat, sauté potatoes, queen's pudding and cheese.* *Supper.*—Scotch eggs and tomato sauce,* cheese and biscuits.

THURSDAY: *Breakfast.*—Grilled sausages and bacon, toast and marmalade. *Dinner.*—Boiled rabbit and onion sauce, cauliflower, roast potatoes, baked apple dumplings. *Supper.*—Sardines with brown bread and butter, cheese and biscuits.

FRIDAY: *Breakfast.*—Porridge, cold tongue, boiled eggs, rolls and butter, jam. *Dinner.*—Curried rabbit and boiled rice,* steamed potatoes, treacle pudding.* *Supper.*—Veal mould,* and cheese and biscuits.

SATURDAY: *Breakfast.*—Porridge, grilled mutton cutlets, and brown bread and butter, fruit. *Dinner.*—Stewed steak and onions, roast potatoes, baked tomatoes, pancakes. *Supper.*—Potato and fish pie,* cheese and biscuits.

* See Recipes immediately following.

YORKSHIRE BRAWN.

Ingredients.—Half pig's head, one pound gravy beef, one pig's foot, a little salt and pepper, nutmeg, clove pepper, water.

Method.—Place all ingredients in a pan, and cover with water; allow to simmer one and a half hours, or until the meat is tender; remove all bones, and cut up the meat into small pieces. Have ready a wetted mould; season the brawn to taste, and place into moulds; allow to cool; turn out; decorate with a little parsley.

YORKSHIRE PUDDING.

Ingredients.—Four tablespoonfuls flour, quarter-teaspoonful salt, half-pint milk, one egg, a little suet (size of nut).

Method.—Mix salt into flour; add the egg and a little milk, and mix to a smooth paste; beat well, and add the remainder of milk; shred in the suet.

N.B.—The addition of suet is a great improvement, and more so in making a larger pudding for a family, for the suet should be added in place of extra eggs, and the result is a *light* pudding.

APPLE AMBER.

Ingredients.—Three or four apples, half-ounce butter, three tablespoonfuls sugar, a little lemon, two eggs, a strip of pastry.

Method.—Line a pie-dish with the strip of pastry, decorating the edge; peel and core the apples, and place in a pan with the butter and sugar; cook until quite tender; add the yolks of eggs and lemon juice. Pour this mixture into centre of dish, and bake in moderately quick oven for twenty minutes; beat the whites very stiffly, and pile up on top of pudding. Dust with a little castor sugar, decorate with cherries and angelica, and place in warm oven until the meringue is a pretty golden brown colour.

CHEESE IN CASES.

Ingredients.—Half-dozen little hollowed croûtes of fried bread, one gill Hollandaise sauce, two tablespoonfuls grated Parmesan cheese.

Method.—Fry the croûtes of bread in deep fat, and keep these hot; prepare the sauce by melting one ounce butter; stir in one tablespoonful flour, and add gradually half-pint of milk. Stir in a little salt and cayenne, and add the yolks of two eggs and a little lemon juice; stir until thick. Lastly add the two tablespoonfuls Parmesan cheese. Fill the croûtes with this mixture, and place in oven until the surfaces become a slight brown colour; serve immediately.

N.B.—The above mixture could be served in china ramakin dishes instead of the fried croûtes. This would save the time in frying.

HOT-POT.

Ingredients.—Any cold meat, salt and pepper, raw potatoes and gravy, one onion.

Method.—Grease a pie-dish; cut up cold meat and place half in the bottom of dish; add a little pepper and

salt, and half the onion and half the gravy; then add a layer of sliced potatoes. Repeat this until the dish is full; bake in hot oven for one hour, and serve immediately.

Cake with Stewed Figs.

Ingredients.—Stale Madeira cake, two tablespoonfuls apricot jam, one glass cooking sherry (optional), one glass water, one pound stewed figs.

Method.—Prepare a glaze with the jam and sherry and water by placing all in pan, and boiling until reduced to the consistency of treacle; cut cake into neat and uniform slices; spread these with glaze, and pile up in glass dish; cover this mound with remainder of glaze, and arrange round, overlapping one another, the figs previously stewed.

Toad-in-the-Hole.

Ingredients.—Batter (as for Yorkshire pudding), sausages or minced meat.

Method.—Pour the batter into a well greased pie-dish, and put in the sausages in pieces, first removing the skins; bake in hot oven for half to three-quarters of an hour; serve with some good gravy.

Steamed Filleted Plaice.

Ingredients.—Fillets of plaice, salt and pepper, white sauce, parsley, and yolk of egg.

Method.—Butter a plate, and season the fillets with salt and pepper; fold the fillets, skin side inside (the dark skin should be removed). Place the fillets on the buttered plate, and cover with another plate; place these on a pan of boiling water, and cook until the fillets are tender—about twenty minutes. Coat each fillet with the sauce, and arrange on dish; decorate lightly with chopped parsley and yolk of egg (hard-boiled), which should be rubbed through a sieve.

N.B.—This is an excellent dish for an invalid.

Queen's Pudding.

Ingredients.—Three ounces bread crumbs or stale sponge cake, two eggs, half-pint milk, two tablespoonfuls sugar, flavouring, piece of butter size of walnut, jam, cherries and angelica (for decoration).

Method.—Heat the milk and scald the crumbs; add the sugar, flavouring, butter, and the yolks of eggs; place these in buttered pie-dish, and bake until set; spread the jam on top, and pile up the whites of eggs beaten stiffly; decorate with strips of angelica and cherries, and place in oven until set and browned slightly.

Scotch Eggs.

Ingredients.—Three hard-boiled eggs, half-pound sausages or cold minced meat, one egg, bread crumbs, parsley, and tomato sauce.

Method.—Remove shells from eggs, and also the skins from the sausages; form the sausage meat into three round cakes, and roll one egg in each, care being taken that the sausage is well pressed to the egg; coat these in the beaten egg, and roll in the bread crumbs; fry in deep fat until a pretty brown colour. Cut the egg in half, and place on dish with cut side up; decorate with parsley, and pour round the tomato sauce.*

N.B.—When moulding the sausage meat on the eggs the ends should be flattened, so that in dishing they stand evenly.

* See recipe in January number.

Curried Rabbit.

Ingredients.—Remains of cold rabbit or any cold meat, Patna rice border.

Curry.—One ounce butter, one onion, one apple, one tomato, half-ounce curry powder, half-ounce curry paste, half-ounce chutney, one ounce flour, a little lemon juice, half-pint milk or stock, one teaspoonful sugar.

Method.—Fry the vegetables in the butter, mix the flour, curry powder, paste, and chutney and sugar with the milk; add these to the fried vegetables, also the lemon juice; simmer for an hour; place the cold rabbit or meat in the curry, and allow to get thoroughly heated through, and serve with a border of rice.

Rice.—Patna rice is the best to use for curries. Wash thoroughly, and place in plenty of boiling water to which has been added one teaspoonful of salt to every quart and a little lemon juice; boil fifteen to twenty minutes; drain on a sieve, and dry thoroughly, keeping the grains separate.

Veal Mould.

Ingredients.—One pound lean veal, half-pound lean ham, two hard-boiled eggs, a dust of salt, pepper, and mace, one and a half pints stock, half-ounce gelatine, a little grated lemon rind.

Method.—Cut up the veal and ham into neat pieces; decorate a plain mould with the hard-boiled egg; fill the mould with the veal and ham and remainder of egg, previously seasoned with the salt, pepper, and mace and lemon rind. Pour in sufficient stock to cover the meat; cover with plate and weight, and bake slowly for three hours; dissolve the gelatine in the remainder of stock, and add to fill up the mould; allow to cool; turn out, and decorate with parsley; serve with salad.

N.B.—This forms a delicious alternative to veal and ham pie, where people cannot take pastry.

Treacle Pudding in Layers.

Ingredients.—Half-pound flour, quarter-pound suet, one teaspoonful baking-powder, salt, water to mix, treacle, and bread crumbs.

Method.—Mix flour, salt, and baking-powder together, and form into stiff dough with the water; line a pudding basin with half the pastry; place a tablespoonful treacle in bottom with tablespoonful bread crumbs; roll out small round of pastry, and place on top of this. Repeat this operation until the mould is filled, lastly adding a round of pastry; steam for one and a half hours.

Potato and Fish Pie.

Ingredients.—One pound cod or any fish, two pounds mashed potatoes, pepper and salt, two hard-boiled eggs, half-pint sauce (anchovy).

Method.—Line a greased pie-dish with half the potatoes; place in centre the fish, previously broken into flakes and all bone and skin removed; also the hard-boiled eggs cut up, and the sauce; add the remainder of potatoes; bake for one hour.

The following are two recipes of cakes which are easily prepared in cases of emergency.

Girdle Cakes.

Ingredients.—One pound flour, six ounces lard and butter, one teaspoonful baking-powder, half-teaspoonful salt, water or milk to mix, two ounces currants (if liked).

Method.—Cut up the fat in the flour in rough small pieces, previously adding the salt and baking-powder;

mix to a stiff paste with the milk or water; roll out in long strip, and fold in three. Roll out and repeat this process three or four times, then cut into cakes with fancy cutter, and bake on a hot girdle, or if this is not at hand the bottom shelf of the oven. A gas oven cooks excellent girdle cakes in a few minutes if the reflector from the top is used for cooking the cakes on, and putting it low down over the gas.

N.B.—The success of these cakes is in the *folding* of the pastry, which must always be turned the same way—that is, the folded edge to the right.

Dropped Scones.

Ingredients.—Quarter-pound flour, one egg, quarter-pint milk, a pinch salt and a teaspoonful sugar, quarter-teaspoonful carbonate soda, half-ounce cream of tartar.

Method.—Make a batter with the flour, egg, and milk, and add the sugar, and lastly the soda and cream of tartar; drop a tablespoonful of this mixture on a hot greased girdle, and turn them when browned. These scones take about five minutes to bake.

N.B.—If Colman's self-raising flour, which makes most successful scones, is used, then the soda and cream of tartar are omitted.

Foods in Season in March.

Meat.—Beef, lamb, mutton, pork, veal (best from March to July).

Game and poultry.—Chickens, ducklings, pigeons, blackcock.

Fish.—Ling, lobsters, mackerel, gurnards, skate, salmon, turbot, trout, and whitebait.

Vegetables.—Broccoli, cabbage, seakale, small salad, onions, leeks, carrots, turnips, potatoes (new), artichokes.

Fruit.—Apples, bananas, figs, prunes, lemons, grapes, oranges (Sevilles), rhubarb.

Hints on the Cooking of Vegetables.

1. Always allow plenty of *boiling* water.
2. For greens, such as sprouts and cabbage, etc., add a handful of salt and quarter-teaspoonful carbonate of soda.
3. Boil quickly, and *always* with the lid off.
4. Press thoroughly when cooked, and serve immediately. Allow quarter of an hour for sprouts or twenty to thirty minutes for cabbage.
5. Peas require *no* soda, but a piece of *sugar* instead. These should also be boiled *gently*. Spinach is cooked without water or soda. Being of a watery nature, it cooks in its own juices.

N.U.T. NOTES.

BY ALLEN CROFT.

THERE are one or two thorny problems concerning which the National Union of Teachers has for various reasons up to the present made no pronouncement, and possibly the more important of these is the employment of married women in schools. When I was a young man—say, twenty years ago—I held what I dare say I considered "strong views" on this topic. With all the jaunty courage of ignorance (to say nothing of the insufferable confidence of second-hand knowledge), I was wont to affirm that the wife's place was *at home*, looking after the rearing and training of her children and the comfort of her husband—this last, of course, man's typically superior, selfish attitude; and I cordially approved the regulations of such School Boards as, at that comparatively remote day, insisted on women teachers tendering their resignations on marriage. But I have lived long enough to understand that women have views of their own about the way in which their lives should be best spent, and that they are far more likely to be correct than those of a man whose chief feature was their "strength." Certainly, most married women teachers are far happier engaged in the profession for which they have been specially trained, and for which they possess particular aptitude, than they would be if permanently out of school; and I have no hesitation in saying that, in the town in which I am privileged to reside and labour, their withdrawal *en masse* from the service of the L.E.A. would mean the loss to the school children of some of the most capable and sympathetic mistresses in the city.

The Employment—

* * *

READERS of the *Practical Teacher* may remember that, nearly a year ago, the question was raised in an acute form at Aberdare, where the keenest resentment and indignation were aroused by the harsh manner in which the L.E.A. attempted to put in force new regulations on the subject. The N.U.T. took up the position that whatever rules the Education Committee thought fit to formulate should not be retrospective, and to the detriment of existing teachers, but should apply to *future* appointments only. Personally, I think the Executive ought now to go further, and state clearly and definitely their view that, so long as a teacher's work is thoroughly and efficiently accomplished, her state, whether married or single, is no concern of the L.E.A. If her domestic responsibilities and the care of her family interfere with her work, then obviously her appointment must be terminated for the sake of the children and the school.

Of Married Mistresses.

I am not ignorant of the so-called "arguments" adduced in certain quarters against the continued employment of married mistresses. I am conscious of the petty jealousies existent in many districts because two not inconsiderable salaries from public funds find their way into one household; and I am painfully aware of the fact that promotion is the slower because many women do not vacate their schools when they elect to make some fortunate man's life happy and complete. I also know that owing to the crass-headed blundering of many L.E.A.s (aided by the marvellous short-sightedness of the Board of Education), there are unfortunately to-day hundreds of trained certificated teachers still out of employment. Yet all-round justice must be done, and neither the mistresses nor the schools be allowed to suffer through hasty, ill-considered action on the part of pusillanimous education committees.

HOW TO SECURE A SCHOOL LIBRARY.

See the First Part of

Nelson's Young Folks' Bookshelf,

Vol. II. Ready March 9.

Of all Booksellers.

Our Readers' Column.

STUDIES OF BOOKS THAT ARE WORTH WHILE.

BY SUSAN CUNNINGTON.

"Literature is more than an interpretation of external nature and of human life: it is a revelation of the widening possibilities of human life, of finer modes of feeling, dawning hopes, new horizons of thought, a broadening faith, and unimagined ideals."—DOWDEN.

George Eliot's "Adam Bede." *

IN these papers I propose to study, some in outline and some in greater detail, a few of the fine examples of our literature in which may be found the distinctive qualities which Professor Dowden names. To be able to comprehend and receive, to appreciate and admire, the message and the work of a great writer is to realise pleasure of a high and moving kind. But such enjoyment only rarely comes by nature. The intelligent sympathy which results in a discriminating taste develops from frequent and deliberate observation of what is admirable, and the inner faculties which respond to the spiritual appeal of good literature need cultivation and training. It is not the easy thing which some people have imagined it to be to *take in*, to receive impressions. Mere blank inactivity is as useless as a headlong search for sensation. "Receptiveness is a rare and massive power, like fortitude." Like fortitude, too, it develops by use; and the mind, once closed and hard, becomes sensitive and responsive, and at length delicately aware of sympathetic vibration.

Of the two great kinds of literature, called by Coleridge the literature of knowledge and the literature of power, our chief concern will be with the latter. In it are comprised the various forms of poetry, drama, imaginative prose, and fiction—all those offspring of the creative imagination whose function it is to touch and to move the spirit rather than to instruct the mind. And though it matters not in what order this great body of literature is approached, yet because in the twentieth century fiction makes the strongest appeal to the majority of readers, the first works to claim our attention shall be novels. A distinguished critic of our own day has pointed out, with some sternness, that novel-reading may be only a kind of mental dram-drinking, whereby is satisfied an unwholesome craving after some fresh sensation. In ancient Athens the market-place offered gratification for this desire to "hear some new thing;" in modern times, dominated by the printing press, the "novel, by its very name, is nothing if not new." Severe as this implied rebuke may be, yet many a halting novice has set forth in the path of devotion from the starting-point of the story.

At the very beginning of the period 1860–80, which has been called the "palmy time of the English novel," there appeared, in three-volume form, *Adam Bede*, by George Eliot. In the fifty years that have passed since its first publication this book has moved and delighted thousands of men and women, and holds a unique place in the ranks of the domestic novel, the romance of provincial life, for its penetrating truth and insight into the springs of human action. Changing fashions in literary criticism have brought about variations in the estimate of George Eliot's place as a novelist, but of this particular work there is hardly any difference of opinion. It will be an interesting exercise to determine in what its high excellence consists.

In approaching the study of a novel, as of any other form of literary art, we see that there are two main divisions into which its qualities and characteristics fall—that of the matter and that of the manner; or, to use the old terms, first, What is said, then, How it is said. In narrative, and especially in stories, many readers are content to appreciate, and indeed to consider, only the former. But unless the work is merely second-rate, and in no worthy sense literature, there is both loss to the reader and dishonour to the book in this idle acceptance. A double and a rarer pleasure comes from the power of enjoying the mode of presentation as well as the theme presented. Indeed, in story-telling, since a very definite limit exists as to novelty in plot and subject, the real scope for the author's genius lies rather in the working out of a familiar main idea than in devising one of startling newness. Though the surroundings of the individual in modern civilised life may be widely different from those of the heroes and heroines of ancient story, yet the human heart, its needs and instincts, and the human will, with its strong or weak fibre, recur perpetually. The "eternal verities," which alone form worthy subjects of poets and thinkers, underlie the accidents of century and race, of custom and environment.

The main theme of *Adam Bede* is that familiar in folk-song and story, of the abandonment to a brief passion of a youth and a girl—he belonging to a privileged class, and not ignobly shunning its duties, yet here ensnared into the base spoiling of a frail life; she, gifted with the beauty of feature which expresses no corresponding inner loveliness, falling a ready victim to the slight impulses of vanity and pleasure which make up her affections. The moral tragedy of Hetty Sorrel, to which the story relentlessly advances, is emphasised and brought home by the depicting of the sordid and vindictive accompaniments of the retribution which overtakes her. The hero of the story, whose name is the title of the book, the silent, devoted lover of poor Hetty, is a patient and faithful representation of a type of manly character but little known in novels before 1860. The author's great skill in portraiture and delicate observation of small traits result in the creation of a personality at once real and convincing. Adam's love of good work, his appreciation of neatness and thoroughness in carrying through any undertaking, his self-contained and modest bearing, and his hatred of meanness and injustice, are George Eliot's affectionate conception of the character of her own father. In somewhat similar portraiture she does honour to him again in "Caleb Garth" in *Middlemarch*. To these lovable characteristics in Adam Bede she adds a strain of austerity and hardness which make him quite faultily human in his relation to other and weaker persons in the story. Throughout he stands in marked contrast to the easy-going, well-intentioned young squire, whose lack of manhood and self-restraint brings trouble and disgrace upon people with whom it was his desire to stand well, and to whom he delighted to plan considerate kindness.

* Recommended officially for Certificate students.

With fine and scrupulous care the author delineates, not only the characters in the moving drama, but also their interaction upon one another. With the slow and inexorable certainty of a Greek tragedy the series of small incidents and unconsidered trifles leads on to the climax of shame and misery, in which the innocent and the upright are involved equally with the weak and the guilty. But, besides the main characters in the book, there are also some secondary ones — vividly drawn, consistently developed, and so real and living that their names signify personalities of the world of books, as clear, as beloved, as admired, and as carefully studied as those of history. In Mrs. Poyser we have the crystallised and focussed shrewdness and native, pungent wit of generations of little-observed, rustic, obscure people whose homely lives give scope for the play of uninstructed intelligence and original reflection. Her caustic comments on masculine obtuseness curiously anticipate an attitude unfamiliar then, though plentifully enough illustrated in life and literature of a later period, and remind us of the truth, which the author plainly advances in *The Mill on the Floss*, that much critical judgment lies behind the becoming respectfulness of the humble and the dependent.

We are reminded of Wordsworth's profession of poetic faith when we read that George Eliot strongly pleaded, before she herself essayed the task of novelist, that "what is simple, natural, unaffected, is the true material of fiction." So she eschews the dazzling careers of the high-born and the adventurous, and chooses the sober lot of the English yeoman and villager for the environment of her characters. Unlike the brilliant master of romance, Sir Walter Scott, she offers us no glowing variety of incident, no episodes over which time and history have cast a glamour of romance, but devotes herself to the task of penetrating into the motives of life and revealing the hidden springs of action. Her sense of the value of psychologic analysis was the chief incentive to her novel-writing; and this characteristic in her work makes it always of special appeal to teachers. The large, artistic spirit in which she deals with the humble subjects is a revelation at once stimulating and convincing. By means of the novel as George Eliot conceives and frames it we may study the histories of the people whom history, past and present, neglects.

Writing in 1859, she places the action of the story in the three years 1799–1801; too near to her immediate audience to be romantic, too far away to be living—in the hands of the mere narrator. Prominently, and yet unobtrusively, the great religious movement of Methodism is brought in; and its marvellous and often unsuspected influence, while as yet it had no political and little social recognition, is finely shown. In Dinah Morris is presented a tender and minute study of devoted womanhood; for it is part of George Eliot's purpose to portray life as a woman sees it, and with a woman's sympathies and experiences. Hence it would have been impossible for her to ignore the large share taken in that great spiritual revival and awakening by unknown and unrecorded women. Yet in her portrayal she is always larger and deeper than the merely womanly; she regards from the broad, human point of view, and records in an impersonal way, the problems of life. Professor Dowden says that "her sympathy spreads with powerful and even flow in every direction;" and it is a matter of special interest to ourselves to realise the truth and tenderness of her insight into the child-mind. Her triumphant subjective example is Maggie Tulliver in *The Mill on the Floss*, but the understanding reader finds a foretaste of that later skill in the objective drawing of little Tottie. Which of us does not know that stout, commonplace infant, the child of elderly parents, spoilt and self-willed, yet mingling with baby perversity some of the reasoned procedure of maturer years? And it is something worth knowing by all, how the warm mother-love of the hard, capable woman, censorious by nature and habit, momentarily transfigures and irradiates her whole being.

Turning from the matter to the manner, there is abundance of interest in studying the technique of this great literary artist. It may be said at once that there are certain externals of method which, after fifty years of narration and comment in fiction, are seen to be blemishes. The incisive reflection, the ironical description, the insistent generalisation, so arresting and effective at the time, are now recognised as wanting in the finished artistry which distinguishes her narrative and conversation; some readers find them tedious. These, however, are accidents of style; in essentials it lacks nothing of justification. As a sympathetic critic has said, "She likes to pause often to discuss the doings of her personages, and to pour forth some noble or tender thought." Again, it is an easy demur that there is a certain want of unity and directness in the march of the story, through the introduction of unnecessary incidents and too many characters. The considerable space given to the description of Arthur's coming-of-age festivity is instanced. But our author throughout takes elaborate pains to show the working of the minds and the growth of motive in her characters, and this opportunity serves to develop a further stage both in Arthur Donnithorne and poor Hetty.

We have continually to admire the quiet skill and sureness with which the setting of the story fixes it in time. The beautiful opening of the narrative abounds in these touches. We are to remember that it is in 1799, hence the mention of "canals, aqueducts, coal-pit engines, and Arkwright's mills;" building "ovens for th' wife;" the "dark-striped linen bed-gown and red kerchief" of the old woman's dress, and the "leather breeches and worsted stockings" of the workman; the buying-off of Seth Bede from service in the militia; the "dear times when wheaten bread and fresh meat were delicacies to working people;" the powdered hair of the vicar, Mr. Unwine; the "cup of tea, an indulgence which Lisbeth rarely allowed herself;" a part of the country "bad for a carpenter, as there was no wood there;" the delight as though of "another Nelson victory;" the news of "Bony's return from Egypt;" and Hetty's memory of her one journey before her painful pilgrimage "on a pillion with her father." Innumerable are the touches of customs, and ideas, and books read, popular hearsay, and conjecture which go to make real and lifelike the conditions of the story. Mr. Irwine receives a parcel of books from London; amongst them *Lyrical Ballads*. His comment, "Most of them twaddling stuff; but the first of them, 'The Ancient Mariner,' is in a different style," preserves for us contemporary opinion in a telling way.

Then the many instances of keen and true observation: the "broad finger-tips" of the carpenter hero; "the very grindstone 'ull go on turning a bit after you loose it;" "villagers never swarm;" Dinah's walk "was discouraging—it had that quiet elasticity that asks for no support;" Adam's "undoubting step;" Adam's anger "made him less tender than usual to his

mother, but did not prevent him from caring as much as usual for his dog;" Arthur's "eyes that seemed to touch her" (Hetty); and Adam's "the nature o' things doesn't change," with which he braces himself to overcome the misery of his father's death.

Little touches that show clearly the vein of George Eliot's ironical humour abound; and when brief and terse, do their part in keeping the interest and attention of the reader stimulated. As, for instance, Adam's dog Gyp, who, being destitute of a tail as a vehicle for his emotions, "was destined, like other worthy persons, to appear more phlegmatic than nature had made him;" Mr. Rann, maintaining the dignity of the Church in the face of the irruption of Methodism by murmuring, "Sehon king of the Amorites: for His mercy endureth for ever;" the description of Methodism in the popular imagination when the afterglow of Wesley's life devotion had faded away; "Nature, that great tragic dramatist, knits us together by bone and muscle, and divides us by the subtler web of our brains;" the reminder about old Mrs. Irwine that "Splendid old ladies, who take a long time to dress in the morning, have often slight sympathy with sickly daughters;" the one order of beauty which turns all heads, even Mrs. Poyser being driven to confess of Hetty that "the naughtier the little huzzy behaved, the prettier she looked;" and finally, another touch occasioned by a dog, "On a cushion sat Pug, with the air of a maiden lady who looked on these familiarities as animal weaknesses, which she made as little show as possible of observing."

When we come to study the larger details of technique, which is possible only on a second or later reading, we are able to appreciate the mastery with which the author embarks upon and carries out her work. The novel to her was never a work of art alone. In the forefront stood ever the moral purpose, so that it is not only as an effective opening of the story that we are able to regard the scene in the workshop. The rolling baritone giving out, above the dull sounds of plane and hammer, the sober counsel,—

> "Let all thy converse be sincere,
> Thy conscience as the noon-day clear,"

strikes the keynote of what is to follow. The trifling conversation between the two brothers and their jesting comrades shows us the strength and the weakness which are both to be trained and disciplined in the days to come. Patiently and minutely the character of Adam Bede is lined in by means of the home scene with poor, peevish Lisbeth; and the first tragic note is struck in the righteous anger with which the self-reliant, honourable son sets to work to finish making the coffin neglected by the shiftless father. With leisurely grasp are introduced Arthur Donnithorne and pretty Hetty Sorrel. A passing mention of the heir's coming-of-age has prepared us for the general goodwill towards the handsome youth; and the reader is as prepared to be pleased with his entrance as the rector, when the cheery greeting is heard, "Godson Arthur. May he come in?"

Then, and only then, in a minute and finished description of the Hall Farm, with its vigorous, scolding mistress, is introduced Hetty in her cool domain, the dairy. The careful drawing of this little figure, with its moving exterior beauty and charm and unlovely pettiness of soul and heart, foreshadows the relentless portrayal of the similar character Rosamond Vincy in *Middlemarch*. Throughout the author seeks to show how people affect each other, and how ideas mould the destinies of the individual. Well may she, then, spare pains to show us Hetty with her aunt and with Totty; with the gay and patronising visitor to the dairy, even with the bright panel of the side-table which, when she was alone, served as a mirror. In emphatic and reasoned sentences she pauses to justify her choice of humble, faulty subjects, and her patient revealing of their motives and their inner selves. "I would not, even if I had the choice, be the clever novelist who could create a world so much better than this, in which we get up in the morning to do our daily work, that you would be likely to turn a harder, colder eye on the real breathing men and women, who can be chilled by your indifference or injured by your prejudice; who can be cheered and helped onward by your fellow-feeling, your forbearance, your outspoken, brave justice." Hence the moral, no less than the artistic, greatness of George Eliot's writing.

1. George Eliot's stories usually have "sad endings." How would you suggest that *Adam Bede* might have ended less sadly?
2. Collect a few examples of the "wit and wisdom" of the author.
3. In compiling illustrative "Scenes from *Adam Bede*" for acting, which would you include?
4. Consider the still-life descriptions in the book, noting the most effective.
5. Dialect in novels is a vexed question; what are its worth and its contribution to the pictures of rustic life in *Adam Bede*?

A FIRST LESSON IN DECIMALS.

BY A. H. BELL, B.SC., WALSALL.

IT is surprising what difficulty the subject of decimals presents to the beginner, and, in fact, many adults would rather struggle with the complexity of vulgar fractions than resort to the easier processes of decimals.

In the following introduction the subject is presented in a practical form without any assumed knowledge of vulgar fractions, the object being to familiarise the pupil with the decimal notation, and to give ideas as to the relative value of figures denoting parts of the unit, without reference to their vulgar fraction equivalents.

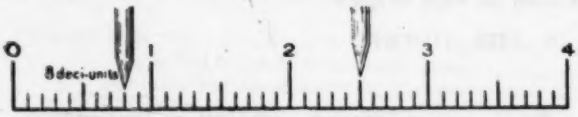
The pupils are supplied with rulers marked in inches, each inch being divided into ten equal parts, the end from which the numbering commences being marked 0. The teacher should provide himself with a large ruler made up of, say, two or three metre rules, or he should prepare a measuring strip from a roll of paper or linen on which the unit is divided into 1,000 equal parts.

After pointing out the necessity for adopting a unit in all measurement, choose the inch as the unit for the present purpose, and instruct the pupils to move their pencils over one of the inches on their rulers. The teacher might here show his magnified unit. The lesson then proceeds as follows:—

The children count up the number of parts into which each unit is divided, and are told to compare the size of the parts. They are then informed that the unit is divided into ten equal parts, and that each part is called a "deci-unit." On being questioned, they will answer that ten deci-units make one unit, an important fact which should be duly emphasised and written down.

Simple exercises are now given. The children, taking up their pencils, are instructed to move over the following lengths, always commencing from the end marked 0

—(*a*) 3 units; (*b*) 3 units 1 deci-unit; (*c*) 2 units 5 deci-units (note that the pencil is mid-way between the second and third unit); (*d*) 0 units 8 deci-units (note that the pencil has not reached a full unit). Other



examples may be given, until the teacher is assured that the meaning of "*deci-unit*" is fully understood.

Proceed now to the still smaller parts of the unit. Fix the attention of the children upon a deci-unit, and ask them to imagine the deci-unit to be divided into ten equal parts. Inquire first how many parts will be obtained from each deci-unit, and then how many such parts there will be in ten deci-units or a whole unit. Call each part a centi-unit, and establish that

10 centi-units make 1 deci-unit.
10 deci-units ,, 1 unit.

Using the teacher's ruler, let members of the class move their pencils over various lengths involving centi-units. One example should have neither units nor deci-units, and another might have five centi-units, which will be seen to be half a deci-unit.

Finally, the children should be asked to move over on their own rulers as accurately as they can, 2 units 3 deci-units 5 centi-units, and also 0 units 0 deci-units 5 centi-units. This will show the teacher whether the value of the centi-unit has been firmly grasped or not.

It will be difficult to imagine the centi-units further subdivided, but pupils will readily understand that ten of the very small parts will be obtained from every centi-unit, and 100 times 10, or 1,000, from a whole unit. Call each new part a milli-unit, and draw up the table :—

10 milli-units make 1 centi-unit.
10 centi-units ,, 1 deci-unit.
10 deci-units ,, 1 unit.

On the large ruler show the relative sizes of the unit and its divisions, and give many exercises involving the parts of the unit dealt with.

It is not advisable at this stage to deal with any parts smaller than milli-units, but it might be mentioned that this process of division by ten may be taken as far as is wished.

Consider, now, how the numbers shall be written down. Take, say, 7 units 3 deci-units and 5 centi-units. Write the figures simply as 735, and ask what number is thus represented. The necessity for some device to show the value of each figure will be at once apparent. It is possible that the children will suggest the placing of the first letter of the name of each kind above the figures, thus,—

u d c
7 3 5,

and if there were also two milli-units,—

u d c m
7 3 5 2.

Point out that the kinds are smaller in order towards the right, and also that if any kind were missing it would be well to place a cipher in its place, lest there should be doubt as to the value of the figures following. Thus 7 units 5 centi-units 2 milli-units would be written

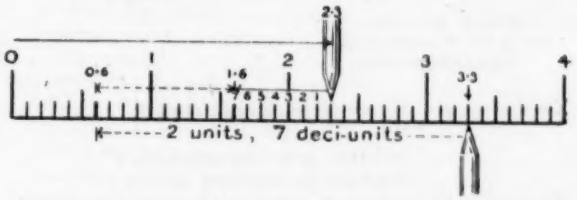
u d c m
7 0 5 2

The teacher will now inform the class that, although this method of denoting the kind is a good one, and might be adopted in the first few lessons, it is usual to separate the parts from the units by placing a dot, called the "decimal point," directly after the unit figure, the kind of each figure being left for the pupil to decide. For example, the above number is written 7·052. Exercises then follow in writing down numbers given out by the teacher.

The class is now prepared to proceed with the ordinary rules of addition and subtraction in subsequent lessons. These operations should first be taught on the rulers. The advantage of this is evident in the case of subtraction in such an example as the following :—

From 2·3 subtract 1·7. The pupils move their pencils from 0 to 2·3, and then count back 7 deci-units, breaking into the second unit and arriving at 1·6. Moving back a full unit finally brings them to 0·6. It will also be readily seen that had they moved an extra 10 deci-units or a unit forward and moved back an extra unit, the result would have been exactly the same.

Writing down the sum, the subtraction of the deci-units is effected by adding ten deci-units to the three, and then equalising by adding a unit to the lower line. This operation corresponds with that last performed on the ruler.



As in many other cases, the teacher will find that if time and care are given to the earlier lessons, the so-called difficulties will never actually arise.

A USEFUL TEACHERS' AID.—Messrs. Cadbury, the well-known cocoa manufacturers, have prepared for school use a specimen card which teachers will find very useful for observation and general information lessons. It shows, by means of actual specimens, the various stages of manufacture from the cocoa pod to the finished product which is so "grateful and comforting." The card can be easily handled, and makes a pretty decoration for the school wall. On the back is printed a short account of the history, cultivation, and manufacture of cocoa.

NEXT MONTH

An interesting article on Simple Mensuration by Mr. J. L. MARTIN.

A HISTORY LESSON.

BY JEANNIE MITCHELL, NEW LUCE PUBLIC SCHOOL, WIGTOWNSHIRE.

THE following was an actual lesson given to a class corresponding to the old Second Standard. The pupils' answers were all given in sentences, but are not detailed for want of space.

"THE PRINCES IN THE TOWER."

Teacher reads story from *Highroads of History* (Nelson).

" tells " briefly.

" asks for chief persons in story.

" " " places "

" " " events "

" writes pupils' answers on blackboard.

" asks, "Who displeased you most in the story?"

" " "Why?"

" " "Why they did not wish the princes killed."

" " "Then why should their uncle wish them killed?"

" " "Why should he kill both?"

Teacher contrasts the cruelty of the boys' uncle with the usual kindness of the pupils' uncles.

Teacher asks if he showed any kindness at all.

Miss J. Mitchell, one of the Winners of our Prize Competition.

Teacher asks pupils to tell what kind of man "the uncle" was.

Teacher asks, "Whom do pupils like most?"

" " "Why?"

" " "Did they give you anything?"

" " "Did they do anything for you?"

Teacher says those are common reasons for liking any one.

Teacher asks, "Then why do you like them?"

Teacher explains here that this love or liking for any one growing up from sympathy is a purer attachment than one which is the result of gratitude for gifts or kindness.

Teacher refers here also to the misfortune of the princes in being born great, and to the saying, "Uneasy lies the head that wears a crown."

Teacher asks if any other person displeased them in the story.

" " "Why?"

" " "Is there anything to be said in favour of the murderers?"

Pupils answer, "The uncle, the princes, the murderers."

" " "The tower, the stairs."

" " "The imprisonment, death, burial of the princes."

One pupil now relates the whole story by help of notes on the blackboard. All pupils then tell part of the story, one pupil taking up the story where other left off.

Pupils answer, "The uncle."

" " "Because he was the means of killing the princes."

" " "Because they had done no wrong."

" " "Because he thought he could not remain king if they lived."

" " "If he only killed one, the other one would get the crown after his death."

" " "That he pretended to be kind by taking the princes to live with him after their father's death."

"That he also said that it would be better for the country if he ruled, as the young princes were not able to reign wisely."

" " "*Greedy*" (because he wanted a king's riches).

"*Vain*" (because he wanted to be a king).

"*Cruel*" (because he killed his nephews).

"*Treacherous*" (because he betrayed his nephews).

" " "The little princes."

Pupils hesitate.

Pupils answer "No."

" " "No."

" " "Because they were badly treated, and they were sorry for them, as they were innocent."

" " "The murderers."

" " "Because they killed the little princes, not because they hated them, but for the gold the wicked uncle had promised them."

" " "They carried out their bargain with the king."

"One of them was kinder than the other,

Teacher asks, "What made him hesitate?"
" " "Then what made him disobey his conscience?"

Teacher here refers to how much evil a child can do by a bad example to his companion.
" refers to the short reign of the uncle, and to the fact that the wicked never truly prosper.

because he hesitated at first to kill the princes."
The eldest pupil in class replied, "His conscience."

Pupils answer, "His love of gold, and the mocking of the other murderer, who called him a coward."

AN ORGANISED SCHEME OF EDUCATION.

BY A DIRECTOR.

IT may be of interest to readers of the *Practical Teacher* to learn how the difficulties of obtaining a properly organised complete scheme of education suitable for all from five to twenty-one years of age have been overcome since the passing of the Act of 1902 in a town of between 30,000 and 40,000 inhabitants, which must, for obvious reasons, be nameless. These difficulties, which obtained more or less everywhere six or eight years ago, were as follows—(1) A lack of connection between primary, secondary, and technical or higher education. The latter, under one of the old technical committees, was catered for by a few scattered classes in different schools, destitute of laboratories and apparatus, and most inconvenient to work in. The primary schools sent out their scholars poorly equipped (as they must be at the leaving age), and it was left to chance whether they attended any classes for further improvement. There was no good secondary day school—a few private schools with resounding titles charged high fees for little value. (2) In the primary schools the difficulties of half-timers, irregular attendance, total exemption by labour certificates, and the necessity of generally teaching Standards VI. and VII. in one class, prevented the work from being as efficient as it should be.

The Act placed all forms of education under one authority, for the county council wisely left the administration of higher education to the locality, assisting generously with grants and advice. The result has been to abolish nearly all the difficulties considered above, and to produce a scheme which is working extremely well, although one is only too well aware that it is not perfect.

The first great work was to erect a technical institute and secondary school containing chemical and physical laboratories, woodwork shops, art rooms, a dozen classrooms of size varying from those accommodating fifteen to larger ones holding fifty students; and as the district is manufacturing, two engineering laboratories were added, the fitting of which cost nearly £3,000. In the elementary schools many improvements were rapidly effected. Special classes with specially qualified teachers were formed at one centre for Standard VII. and ex-VII. children. Normally they reach these classes about the age of twelve years. A two years' syllabus was prepared, going considerably further than the Code requirements, special attention being given to practical science, mathematics, and drawing for the boys, and domestic economy, etc., for the girls. Letters were addressed to the parents pointing out the advantages of this special course, and the response was most gratifying. Half-time exemption was abolished, and although statutory notice of this was given in the town there was not a single objection raised. Full time exemption on the result of a "labour" examination was discouraged, and the very few cases who do obtain the certificate only get it under the promise of attending evening classes. The average attendance stood at about eighty-two, mainly due to the old system of duplicate registers by which a week or ten days elapsed before absentees were looked up, by which time the absence and its cause were forgotten. This was altered, the town was divided into compact districts, and additional attendance officers appointed. The teacher when marking the register enters on separate slips provided the names of the absentees; these papers are collected between 9 and 10, and visits to *all* paid during the session. Frequently the attendance officer is looking up absentees by 9.30, and every absentee is reported on at the school during the same day. The School Attendance Committee accept no excuse but certified illness, with the result that the attendance now oscillates between ninety-two and ninety-five. The increase in grant earned pays for the additional expense six times over, and is equivalent to more than a penny rate. Besides this, the advantage to the teaching staff is obvious, and the standard of attainment is considerably increased.

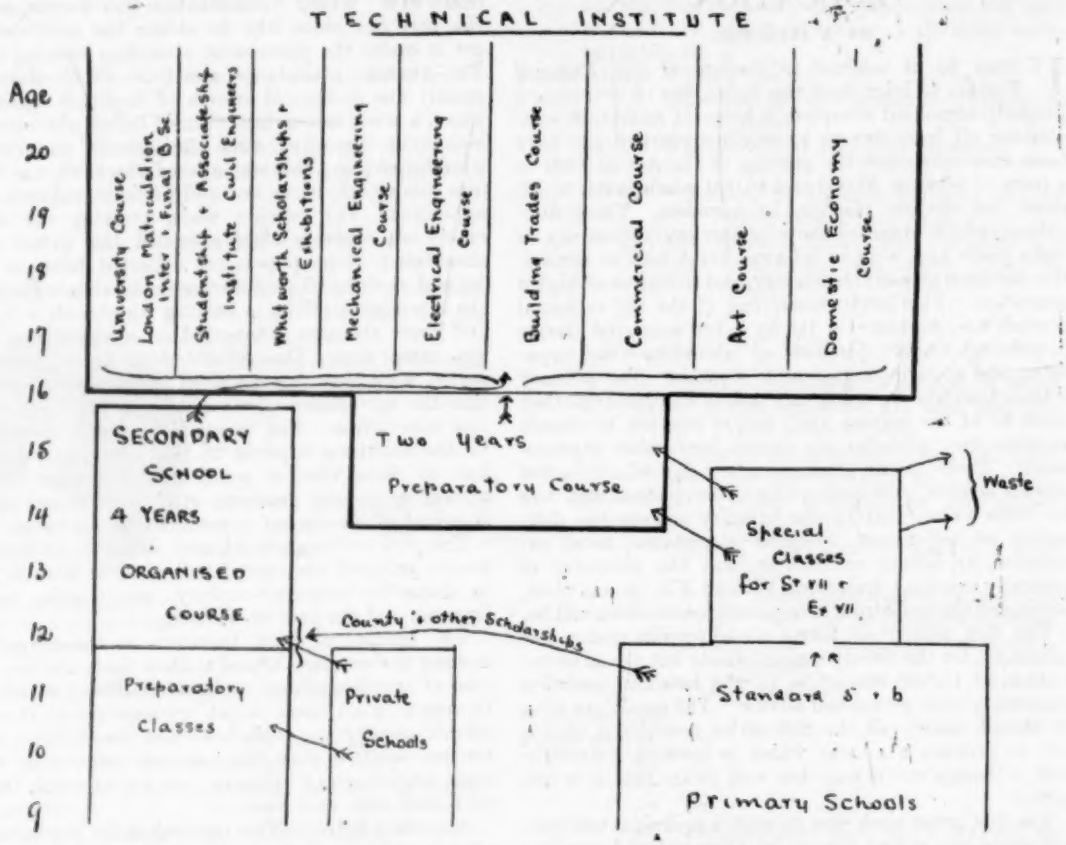
The girls in Standard VI. and upwards, or those over twelve years of age, spend half of their time in school in domestic subjects—cookery, needlework, personal hygiene, and the care of children.

The reading of good literature is encouraged, and beyond the ordinary school readers there are two dozen sets of supplementary readers, consisting of standard literature in all cases, which are sent round the upper schools as they are needed, so that the children do not become wearied with the continual repetition of the same uninteresting extracts, but get through three or four good tales each year.

Secondary School.—The curriculum in the secondary school, which is of the dual type, is carefully arranged to fit in with the technical and primary schools. A four years' organised course is taken, the normal age of the children being from twelve to sixteen, but scholars are admitted as young as nine or ten in the preparatory section. Pupils drift in from private schools at all ages; but since a rigorous entrance examination has been instituted, there are very few who come from this source at a later age than twelve. The school is also fed from the primary schools by means of county and other scholarships, preference always being given to those who can start at once on the organised course.

Technical Institute.—This provides further education for all classes. There is a preparatory course for students normally of the age of fourteen to sixteen, the first year of which corresponds to the second year's work in the special classes. A glance at the accompanying diagram will show the arrangement. A boy who leaves the

elementary school at fourteen goes right on with his work at the Institute, and if he remains at school till fifteen he has lost no time in the Institute, but enters the second year's course. Scholars who have been through the secondary school, and those who have taken the preparatory course, are eligible at sixteen to take up one of the organised courses in the Institute. These last for four years, and are carefully drafted to suit the needs of students. For instance, the Commercial Course, consisting of classes in office method and routine, commercial correspondence, shorthand, book-keeping, typewriting, French, and German, aims at teaching a lad all he need know to occupy a good position in any office. Our strongest section is the university course



and the mechanical engineering. Being a manufacturing town, engineering is, of course, the occupation offering greatest attraction, and taking the cream of the students.

In this section we have received the greatest help and co-operation from the managers of the firms. For instance, the most important firm admits pupils and apprentices to the works at about the age of sixteen on the results of an entrance examination which is held by the Institute, and is based on the two years' preparatory course for apprentices, and on the first two years of the mechanical engineering course for pupils. In all the factories it is a condition of employment that the pupil or apprentice attends the classes at the Institute, and a monthly report is made to the manager on the attendance and work of every boy. Excellent reports from the Institute lead to promotion and increased pay in the works, and so the closest connection exists between the two. Each firm has a representative on the body of governors, who takes a keen interest in the lads.

A further privilege is given. The lads who do particularly well in both day and evening work are annually selected and allowed to attend the Institute on two afternoons a week to work for special examinations. For this time *they are paid*, as though they were in the shops. The boys who are admitted to the day classes are all aiming at the London B.Sc. (engineering), the A.M.I.C.E., or Whitworth Scholarships and Exhibitions.

We have therefore no overlapping of effort in any of the schools. Each is doing a separate part in building up a complete structure, and there is a direct continuity of education from five years to twenty-one for those who wish to avail themselves of it.

The weak spot is the fact that of the children who leave school at fourteen years of age 50 per cent. are lost. The boys drift into such places as those of paper boys, errand boys, van boys. The long hours they work prevent them coming to evening classes, and at seventeen or eighteen (frequently before) they give way to younger and cheaper youths, and drift into the ranks of the unskilled and therefore unemployed labourer. This problem of child labour is too difficult to deal with locally; it demands national attention and control.

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SEASONAL LESSONS IN NATURE STUDY.

BY THE REV. ALFRED THORNLEY, M.A., F.L.S., F.E.S., SUPERINTENDENT OF NATURE STUDY TO THE NOTTINGHAMSHIRE AND LEICESTERSHIRE COUNTY COUNCILS.

ANIMAL STUDY.

THE WILD RABBIT—*Continued.*

WE now reach that part of the axial skeleton known as the backbone (vertebral column). This part is never absent from vertebrates. Note :—

1. The backbone consists of a slightly variable number of joints (about forty-seven) called vertebræ.

2. The vertebræ may readily be separated into groups —for example, a certain number bear ribs—but all are derived from one simple type.

3. The best vertebra to study is one taken from about the middle of the lumbar region, as in it all the component parts are well represented.

Point out (see Fig. 1),—

(*a*) The (neural) arch.
(*b*) The (neural) spine.
(*c*) The (neural) canal.
(*d*) The body (*centrum*).
(*e*) The transverse processes.
(*f*) The anterior and posterior articulating processes. (To tell which is anterior and which posterior, see under 5*b*).
(*g*) The passages for the pairs of spinal nerves.

FIG. 1.—FRONT VIEW OF LUMBAR VERTEBRA (SHEEP).

(*a*) The (neural) arch. (*b*) The (neural) spine. (*c*) The (neural) canal. (*d*) The body (*centrum*). (*e*) The transverse processes. (*f*) The anterior and posterior articulating processes. (To tell which is anterior and which posterior, see under 5*b*.)

The class should be provided with vertebræ for study. Those of the sheep, being larger than those of the rabbit, are well adapted for class work. The children should be able to fit together two consecutive vertebræ, and note how the notches in the walls of the neural arch form a hole on each side, through which the pairs of spinal nerves pass.

4. *Particular Study of Backbone.*

(*a*) The neck vertebræ (*cervicals*), always seven in number in mammals, with rare exceptions. (Compare neck of bear and of giraffe, yet same number of vertebræ in each.) The peculiar form of the two first—*atlas* and *axis* (see Fig. 2)—ring-like character of rest.

(*b*) The thoracic vertebræ (*dorsals*), generally thirteen. Their characteristics—the long spine; the short transverse processes; the large number of articulating surfaces (ten). (Fig. 3.) If a number of consecutive thoracic vertebræ, with ribs attached, be observed, it will be seen in a moment why we find so many articulating surfaces on each vertebra. The mode of articulation

FIG. 2*a*.—ATLAS VERTEBRA (WOLF).

(*c*) The (neural) canal. (*e*) The transverse processes. (*f*) The anterior and posterior articulating processes. (To tell which is anterior and which posterior, see under 5*b*.)

of the rib must be carefully noted. Whilst the upper head of the rib articulates with the transverse process of the vertebra, the lower one articulates at a point just between the two consecutive centra. Thus in the

FIG. 2*b*.—AXIS VERTEBRA (WOLF).

(*b*) The neural spine. (*d*) The body (*centrum*). (*f*) The anterior and posterior articulating processes. (To tell which is anterior and which posterior, see under 5*b*).

diagram (Fig. 3) show each one-half of the complete facet for articulation of the lower head of the rib. Remembering then the one on the transverse process, we shall have altogether on each side of the vertebra three facets. These six, with the four articulating surfaces of the anterior and posterior processes, will make up the total of ten already mentioned. This makes it easy to recognise a typical thoracic vertebra.

(*c*) The loin vertebræ (*lumbars*), six or seven in number. These have already been studied.

(*d*) The sacral vertebræ (*sacrals*). In the rabbit three in number. Notice their fusion, to give strength for attachment of hip girdle, the large transverse processes of the first.

(*e*) The tail vertebræ (*caudals*), about sixteen in number. Notice their gradual degeneration, until the distal ones are mere bony cylinders, and probably represent centra. This degeneration is due to cessation of function.

5. *How the backbone is made flexible.*

By boiling a piece of rabbit's backbone, the vertebræ can easily be separated from one another. Then it will be seen that :—

(*a*) Between each pair of centra is placed an elastic cartilaginous disc.

FIG. 3.—TYPICAL THORACIC VERTEBRA (OX).

(*b*) The (neural) spine. (*d*) The body (*centrum*). (*e*) The transverse processes. (*f*) The anterior and posterior articulating processes. (To tell which is anterior and which posterior, see under 5*b*.) (*g*) Half facet for articulation of lower head of rib, the upper being articulated at *e*.

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(*b*) That the facets of the articulating processes of the vertebra can to a slight extent glide over each other —that is, the anterior processes of one vertebra glide under the posterior processes of the vertebra in front of it. It is true that the amount of bending possible between each pair of vertebræ is very small, but this amount multiplied by the number of vertebræ in the back will allow of a considerable flexion.

B. *The Appendicular Skeleton.*

1. The shoulder girdle.

(*a*) The shoulder blade (*scapula*). (See Fig. 4.) Notice the long ridge technically known as the spine, and concavity at the narrow end (*glenoid cavity*).

FIG. 4.—SHOULDER BLADE OF RABBIT. (*a*) Spine. (*b*) Glenoid cavity.

(*b*) The very small collar bones (*clavicles*). These bones, though well developed in all animals which use their fore limbs much as we use our arms—for example, monkeys and sloths—are either very small or absent in those animals in which the movement of the fore limbs is practically confined to walking and running —for example, horse and ox. Notice their attachment to shoulder blade and sternum.

(*c*) The breast bone (*sternum*), to which most of the ribs articulate. Notice how this is done—not directly, but indirectly, by cartilaginous structures. How many ribs are free? The mode of articulation of the ribs to the vertebræ must be carefully observed.

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Materials.—Dry and soaked beans, and beans in several stages of germination; black cycle varnish; pyrogallic acid and caustic potash. Beans may be germinated on damp flannel, or in damp sand or ordinary soil. A simple and instructive way of germinating them is the following:—

Take a large glass beaker and line it with blotting-paper; then fill up the centre with sawdust, which will press the blotting-paper evenly against the sides of the glass. Now insert beans in various positions between the blotting-paper and the glass, and then moisten the sawdust with water. The process of germination in the case of each bean can now be watched continuously.

1. Let the children make a drawing of a dry bean from the side, and from the end where the hilum can be well seen.

2. Then let them take a soaked bean and note the following external parts:—

(*a*) The scar (*hilum*).

(*b*) The little raised triangle immediately above the scar.

(*c*) The "pore" (*micropyle*) between the above triangle and the nearest end of the scar. On squeezing the bean small bubbles will appear on this pore.

Now let them dissect the bean and note:—

(*d*) The skin (*testa*).

(*e*) The large fleshy seed-leaves (*cotyledons*), two in number.

(*f*) Remove the cotyledons and find between them the young plant (*embryo*).

(*g*) By taking a bean somewhat advanced in germination it will readily be seen that the extruded part of the embryo (forming the raised triangle, see *b*) is the *primitive root* or *radicle*, and the other end folded between the cotyledons is the primitive shoot (*plumule*).

3. Let the children make drawings of the embryo. One cotyledon can be carefully removed, and the other one with the attached embryo drawn.

4. A number of rather advanced germinated beans all of the same age must now be taken, and whole cotyledons and parts of them removed carefully, the beans being again planted. For example, let both cotyledons be removed from one embryo; one cotyledon from another; half a cotyledon from a third, etc. In a fortnight's time let these be examined in order to see which has made the most progress. From this the important deduction must be made that the cotyledons contain a supply of food, which is gradually used up by the embryo.

5. It will now be possible to draw up definitions of (i) a seed, and (ii) germination.

(i) A seed is a packet containing a young plant with its supply of food.

(ii) Germination is the awakening up of the young plant from a resting condition (*dormant*) to lead a separate life. The age of seed as a factor in germination should be made a subject of experimentation. Thus old as well as new seed should be sown at the same time, and the period between the time of sowing and the appearance of the young plant noted.

Seeds should be compared with the eggs of animals, and children should be encouraged to wonder at the *marvel of life* hidden in a dry seed. To young children the beautiful story of the "Sleeping Beauty" can be told, in order to arouse in them an appreciation of the poetical side of nature.

(*To be continued.*)

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Voltaire, d'abord, possède au plus haut degré le sens du relatif, dé l'évolution continue qui se poursuit à travers les âges. Tandis que le XVII^e^ siècle considérait de préférence ce que l'homme ou le monde ont de fixe et de constant, ce qu'en voit surtout Voltaire, ce sont les changements perpétuels. Historien dans la véritable acceptation du mot—car le sens du relatif n'est autre chose que le sens historique—l'histoire, pour lui, consiste à montrer de quelle manière se modifient d'âge en âge l'esprit, les mœurs, les lois des peuples. Ces modifications l'ont tout particulièrement frappé chez nous. Mais il les marque aussi dans l'étude des peuples moins prompts à se transformer. "Les Espagnols d'aujourd'hui, dit-il par exemple ne sont plus les Espagnols de Charles-Quint ...; les Anglais ne ressemblent pas plus aux fanatiques de Cromwell que les moines et les monsignori dont Rome est peuplée ne ressemblent aux Scipions." Et citons surtout l'avant-propos de *l'Histoire du Parlement;* il y développe cette idée capitale qu'aucun corps ne reste immuable, que tout change d'un bout à l'autre de la terre, que la science historique est celle des changements. Or l'évolution du genre humain, selon Voltaire, a le progrès pour loi. Comparons les temps et plaignons-nous, si nous l'osons, c'est "une réflexion qu'on doit faire presque à chaque page" écrit-il dans *l'Essai sur les Mœurs*, et il l'y fait très souvent. Sans doute les lettres et les arts peuvent ne pas être toujours en progrès; bien des fois il déclare lui-même que le XVIII^e^ siècle artistique et littéraire ne vaut pas le XVII^e^. Le progrès auquel il a cru, c'est celui de la philosophie; et il explique comme quoi le XVIII^e^ siècle, inférieur au XVII^e^ par sa littérature, lui est supérieur par ses lumières. Ce progrès, *l'Essai sur les Mœurs* en retrace le tableau dans le passé. Mais il se continuera dans les âges futurs; l'humanité, siècle après siècle, doit devenir meilleure et plus heureuse, à mesure que la raison l'affranchira, que la science multipliera et amplifiera ses moyens d'action.

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The name and address of "Lucin," the winner of last month's competition, are Mr. Robert H. Nicol, Lea Cot, Penarth.

REPORT.

It has been rather difficult to select the prize winner from among the first half-dozen competitors. Although, properly speaking, there were only a few real difficulties in the passage, competitors managed between them considerably to extend the number. *Lettré* was a difficulty of this class. Even in *Comment diable*, etc., some competitors seemed to find a reference to horse-racing. One competitor translated *Je m'enfuirais de ce théâtre périlleux* as "I should elope (!!) from this perilous theatre." *Etats*, were it not for the capital letter, might mean "vocation" or "profession." Many translated *défait* as "loses," and some took *fortunes* too much in a pecuniary sense. Too many gave a mere dictionary meaning to *cuistre*. The choice of a word to represent *cuistre* is comparatively indifferent so long as *plaider comme un cuistre* is translated so as to represent indifferent pleading. Many failed in *le vent me pousse*, although the metaphor is obvious.

PRIZE TRANSLATION.

The slight reputation as a literary barrister I have won at the Law Courts increases still more my natural timidity; my position as a Member of Council embarrasses and confuses me. I seem always to hear the judges saying to one another, "How the deuce could they appoint such a lout?" You may tell me this is an obsession, a monomania, that it is quite stupid. That may be, but the stupidity remains, and I cannot get rid of it. I am ashamed of the money I earn, and yet it costs me cruel pain. When a client pays me in advance, I say to myself under my breath, "There's another poor fellow going to be robbed." When people bring me honorariums after a case that has been badly pleaded, lost sometimes through my stupidity and my lack of point, I am always tempted to hand them back; and were it not the need and necessity of living by this ill-chosen career, I would flee from this dangerous environment, where I stumble on the tight-rope like a clumsy mountebank, and where I fancy I am always going to end my capers with some shameful fall. In short, my poor Henry, I never pleaded so much or so ill. I am sorry to see that instead of progressing I retrogress and fall in my own estimation, and what I think of myself it seems impossible that others too will not soon think. Strange, however, it is, and how true, that in states where the making or unmaking of a man's fortune lies with the public, it is almost as difficult to lose as it is hard to gain its favour! It matters not that I plead like a lackey, popular favour carries me along.

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From the University Tutorial Press we have received two volumes intended to assist candidates preparing for the Certificate and Preliminary Certificate Examinations. *Section A Chemistry*, by H. W. Bausor, M.A. (University Tutorial Press. 2s.), is a book which has been drawn up on thoroughly satisfactory lines. It steers a middle course between those "heuristic" teachers who leave the student to flounder about by himself, and those who give the results of abstract reasoning from experiments before the experiments themselves. The course is illustrated by a hundred and fifty-six experiments, most of which can easily be performed by the student himself; and it is only after he has been prepared by experimental work that the student is introduced to chemical philosophy. The directions and explanations are remarkably clear, and the student who works carefully through this little book will acquire not only a good knowledge of but also a liking for the subject. Chapter IX. does not come within the syllabus of the Preliminary Certificate Examination, but personally we should recommend all candidates to read it, and perhaps in the next edition the author will alter the footnote from "should be omitted" to "may be omitted."

Section B Physics, by John Satterly, B.Sc. (University Tutorial Press. 3s.), is an attractive book covering a rather unattractive syllabus. Since experimental work always arouses the interest and fixes the attention, it seems desirable to begin a course of physics with heat, or one of the other branches which most readily lend themselves to experiment. Students who are not fairly well on with mathematics are often disgusted with physics when they have to begin with statics and dynamics. In this case the author follows the order of the syllabus, but he assumes only the most elementary knowledge of mathematics, and treats the subject from an experimental point of view. In Part V. the writer also follows the syllabus, and beginning with the production of electricity by rubbing sealing-wax, he devotes the greater part of his space to "frictional electricity." It would be much better if the study of electricity were to begin with the current, for nearly every industrial application of electricity is concerned with the current. Moreover, experiments with currents lend themselves to definite measurements, and it is hardly an exaggeration to say that "science is measurement." In experimenting with currents even a beginner can generally obtain a satisfactory result, and the teacher has not to apologise for failure on account of "the dampness of the air." In spite of this matter, for which the author is not responsible, the book is an excellent one; the exposition of the subject is clear, and is aided by capital diagrams and illustrations.

First Stage Steam. By J. H. Hayward, M.Sc. (University Tutorial Press. 2s.) This excellent book covers the syllabus of the South Kensington Examination, and is quite an up-to-date treatise on the subject, dealing with the Parson's turbine and the internal combustion engines used in motor cars. In the introductory chapter there are some slight discrepancies between the number of divisions said to be taken in the text and those actually marked off on the squared paper. A careful perusal, however, has not led to the detection of any other inaccuracies, but to a state of admiration at the clear way in which so much information has been given in such a small space.

Questions and Answers in Electrical Engineering. By A. E. Moore and Frank Shaw. (Longmans and Co. 2s. 6d.) This is not intended as a complete treatise, but candidates for City and Guilds Examination will find it a useful guide, and the ordinary student of electricity will find in it many valuable hints that are not given in the ordinary text-book.

Elementary Rural Science and Gardening. By W. E. Clarke. (Normal Press. 2s. 6d.) This book deals with the botany syllabus in the Certificate Examination, and after treating the structure and life-history of plants in a systematic way, it proceeds to apply the principles to the cultivation of plants in the garden. It contains a large number of useful and suggestive test questions.

A Plant Book for Schools. By Otto V. Darbishire, B.A., Ph.D. (A. and C. Black.) This is one of the best introductory books in botany we have met with for a very long time. Too frequently, alas, botany loses its educational value because it is not taught as a science but as a collection of long names, often not very closely associated with the things themselves. A teacher who takes his class carefully through this book, and does the experimental work and field work that it recommends, will find that his pupils have acquired a sound knowledge of all the fundamental parts of the subject.

Wayside and Woodland Ferns. A Pocket Guide to the British Ferns, Horsetails, and Club-mosses. By Edward Step, F.L.S., Author of "Wayside and Woodland Blossoms," etc., with coloured Figures of every species by Mabel E. Step, and 67 Photographs by the Author. (Frederick Warne and Co., London.)

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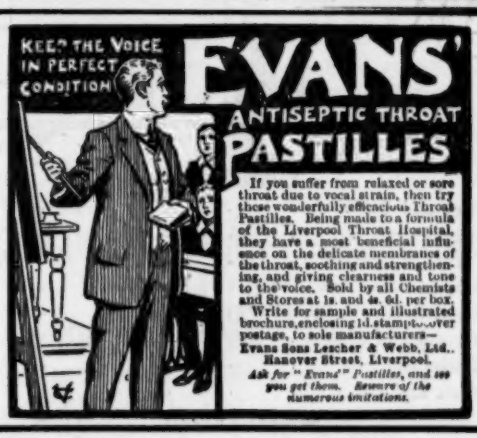
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